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HYPOGLYCEMIA AND RESTORATION WITH GLUCOSE

CHAIRMAN'S ADDRESS

FRANK C. MANN, M.D.

ROCHESTER, MINN.

It has been known for almost a century that the concentration of the sugar in the blood might under certain conditions decrease to a very low value, but it has been only a little more than two decades since it was learned that a characteristic group of symptoms followed by death developed in hypoglycemia and that the administration of suitable amounts of glucose would restore the moribund organism in hypoglycemia to normal. The concomitant development of the characteristic symptoms associated with hypoglycemia and the restoration of the dying organism to a quick and complete recovery by glucose are not only among the most dramatic but also some of the most constant biologic phenomena noted in the higher forms of animals. It is my purpose in this paper to present briefly the current knowledge concerning these two physiologic processes which has been obtained from a review and evaluation of the results of a large number of investigations.

It has been conclusively demonstrated that a constant supply of glucose is essential for life in the higher organisms. If the glucose content of the blood decreases below a minimal value, death invariably occurs. Since the sources of glucose available in nature are many, varied and usually not in the form of the substance itself, elaborate physiologic mechanisms are necessary to insure a constant supply of this vital substance to the tissues of the body. The gastrointestinal tract affords the means by which glucose is obtained for the organism from the crude substances in which the sugar occurs or from which it can be made. The rate at which glucose enters the body from the intestinal tract is variable. There is a plethora of glucose during the time of absorption from the alimentary tract and a deficiency between periods of feeding. In order to maintain a life sustaining amount of glucose in the blood a regulatory mechanism within the body is absolutely essential. The maintenance of the sugar content of the blood is a physiologic responsibility of the liver.

The exact mechanisms involved in the maintenance of the blood sugar values under the varying physiologic requirements for glucose are not fully understood, but it has been definitely proved that the liver is essential. The liver has been removed from a large number of animals including representatives of several species. In no instance has the blood sugar failed to decrease in the dehepatized animal and in no instance has there been a restoration of the blood sugar after removal of the liver except as a result of the administration of glucose or substances from which glucose could readily be made within the liverless body. The liver is necessary for maintaining the concentration of sugar of the blood, and compensation for loss of this hepatic function can be made only by the artificial administration of glucose. The evidence would indicate conclusively that the liver is always either directly or indirectly involved in hypoglycemia.

The function of the liver of supplying glucose to the blood depends on the ability and capacity of the hepatic tissue for storing and making glucose. Glucose is stored in the liver in the form of glycogen and made by the hepatic cells from a large number of substances. It has been shown that glycogen is made from glucose when the concentration of the sugar in the blood reaching the liver is above the physiologic level being maintained at that particular time. The liver makes glucose and glycogen from the other carbohydrate substances that are absorbed from the intestine. The liver also makes glucose from noncarbohydrate foodstuffs. Carbohydrate can be derived from both protein and the glycerol fraction of fat. The processes whereby these noncarbohydrate substances are made into glucose and glycogen occur mainly, if not wholly, in the liver. Certain intermediary metabolites of extrahepatic tissues are converted into glycogen by the hepatic tissue.

Glycogen is found in many tissues of the body besides the liver. The total amount of glycogen in the muscle tissue exceeds the amount in the liver. Tissues other than the liver and muscle normally contain only small amounts of glycogen. The evidence would indicate that the enzymes in the extrahepatic tissues which contain glycogen convert it into substances other than glucose. It has been proved that glycogen in the muscle does not give origin to blood sugar and it has not been proved that the sugar of the blood can origniate from the glycogen found in tissues other than the liver. Likewise the existing evidence indicates that only small amounts of glucose can be made from other substances in tissues outside the liver. While it cannot be stated that extrahepatic tissues do not aid the liver in the maintenance of the blood sugar either by a glycogen stage or by the direct formation of glucose, such aid must be very feeble. The fact that fatal hypoglycemia always follows removal of the liver is sufficient proof that, if extrahepatic sources of blood sugar exist, they

From the Division of Experimental Medicine, Mayo Foundation.
Read before the Section on Pathology and Physiology at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 15, 1944.

are totally incapable of supplying the needs of the body for glucose.

Restoration in hypoglycemia is specific for glucose. Conclusive proof for this statement is derived from observations on the dehepatized animal because, when the liver is present, partial restoration of the blood sugar in hypoglycemia can be brought about by the administration of substances which stimulate the liver to secrete sugar into the blood. A very large number of substances have been injected into dehepatized animals in hypoglycemia for the purpose of resuscitation. The results of these experiments are very definite and conclusive. The dehepatized animal in hypoglycemia is restored to normal only by glucose or substances from which glucose can be made in the tissues of the body outside the liver. All substances used to date, with the exception of glucose and those substances that can be converted to glucose extrahepatically, have proved to be ineffectual in the prevention of death of the hypoglycemic, liverless animal. These two facts, (1) that a lack of glucose in the blood causes death and (2) that glucose alone is specific for restoration in hypoglycemia, prove conclusively that a minimal amount of glucose is required and is constantly being utilized in some manner by the animal organism during life.

A decrease of the concentration of blood sugar to values which are followed by symptoms and death may be due to many causes. Hypoglycemia may be due to the following general causes: (1) utilization of glucose faster than it can be supplied, (2) dearth of glucose and substances from which glucose can be made, (3) failure of the intrinsic hepatic mechanisms for storage, synthesis or secretion of glucose or (4) primary hepatic insufficiency. Since most of the glucose supplied to the body is utilized in the extrahepatic tissues, anhepatic processes may profoundly alter the rate at which glucose is withdrawn from the blood. Certain anhepatic processes are also essential for providing the hepatic tissues with some of the substances from which glucose is made within the liver. The intrinsic hepatic mechanism for providing glucose for the body is affected by substances produced in extrahepatic tissues. Primary hepatic insufficiency may cause hypoglycemia, but it should be noted that only a small percentage of the normal amount of hepatic tissue is required for the maintenance of the normal blood sugar values.

There are numerous anhepatic substances and processes which are of fundamental importance in regard to the maintenance of the concentration of glucose in the blood. Among these, certain endocrine substances and types of metabolism are of great significance. In most instances, in spite of a vast amount of creditable research, agreement is lacking in regard to the mechanisms whereby the various hormones affect the blood sugar. An interesting chapter in physiology will have been written when the various phases of these mechanisms have been conclusively demonstrated. There is a considerable bulk of evidence which indicates that the type of food being utilized in preponderance in the extrahepatic tissues greatly alters the mechanism for control of the blood sugar.

Several interesting hypotheses have been developed in explanation of the cause of the symptoms in hypoglycemia. The data obtained for the support of these hypotheses have been of considerable value in clarifying certain phases of the phenomenon. Since the major symptoms of hypoglycemia indicate that the functions of the nervous system are primarily affected and since glucose is very important in metabolism, the more pertinent investigations on the cause of the symptoms of hypoglycemia have dealt with the metabolism of the brain.

A considerable amount of evidence has been accumulated from various sources which indicates that glucose is the main if not the only source of energy for the brain. The results of a number of investigations on the oxygen consumption and carbon dioxide production of brain tissue in vivo agree in general that the oxygen consumption is high and that the respiratory quotient is usually about unity. The results of studies on the metabolism of slices of brain tissue are in accord with those of the studies of the brain tissue in vivo. While the results of none of these investigations, because of the possibility of error owing to the methods that had to be used, should be accepted without qualification and in spite of the fact that a serious error was made in regarding glucose as the only source of energy for muscular contraction, it would appear highly probable that the brain obtains, at the least, most of its energy from the combustion of carbohydrate.

The results of investigation of the metabolism of the brain in hypoglycemia as well as the results of studies on the interrelation between anoxia, asphyxia and hypoglycemia indicate that the oxidative metabolism of the brain is diminished in hypoglycemia. This finding provides an explanation for the sequence of the development of the symptoms of hypoglycemia. The decrease of blood sugar affects various regions of the brain successively, beginning with the cerebral hemispheres and ending with the vital centers in the medulla. This definite order of the symptoms is predicated on the basis that the lack of glucose affects the brain cells having the highest rate of metabolism first. In this connection it should be noted that other factors are also involved because the symptoms of hypoglycemia may develop, under certain conditions, at a blood sugar value which, though decreased from its immediate previous value, is above the normal level.

The mechanism whereby hypoglycemia causes death and the action of glucose in producing restoration remain as important and only partially solved problems. It was noted in the first experiments on the dehepatized animal in which hypoglycemia was recognized as a cause of death that the respiration always stopped before the heart. It is usually possible to restore the animal in hypoglycemia after respiration has ceased by the application of artificial respiration while injecting glucose. As previously mentioned, all the major symptoms that appear in hypoglycemia can be referred to functional alterations in the central nervous system. The discernible effect of glucose is to restore the functional activity of the brain. These facts would appear to prove that the central nervous system constantly requires the presence of glucose in order to function. It is not so evident that other tissues also require glucose to maintain life. In this connection it should be noted that isolated organs as well as isolated tissues are often studied under a condition of hypoglycemia. Some of the functions of perfused organs appear to be performed normally in the absence of glucose in the perfusate or the organ itself. It would appear that life and function can be maintained in some tissues without glucose.

While the discovery that a certain concentration of glucose in the blood is essential for life was made on the dehepatized animal, most of the facts that are known about the effects of a low blood sugar on the various physiologic activities of the body have been learned through the use of insulin because it is easier to produce hypoglycemia with insulin than by any other known method. The results of studies on hypoglycemia produced by removal of the liver and the injection of insulin have been mutually corroborative. It would appear that the cause of the symptoms and death in hypoglycemia is the same regardless of the mechanism producing the decrease of blood sugar. However, there is one great difference between the restoration of the organism in hypoglycemia due to removal of the liver and in that due to other causes. While glucose is effective in restoring the hypoglycemic organism to normal, provided the lack of glucose has not persisted for too long a period, regardless of the cause of the hypoglycemia, in the absence of the liver the period of restoration is only temporary while in the presence of the liver it is permanent or persists until the causative agent is again active. A permanent recovery from hypoglycemia always depends on hepatic activity.

Since the presence of the liver has remained as a possible source of error in the interpretation of the results of studies on hypoglycemia produced by extrahepatic causes, my colleagues and I have recently attempted to develop a method for the study of a preparation which not only is practically glucose free but also is incapable of receiving glucose except by administration. The objective of the research was to attempt to maintain artificially those functions of the body loss of which, owing to the hypoglycemia, appeared to be the cause of death and thus determine the physiologic activities that would persist in the absence of glucose.

Briefly the method is as follows: The liver is removed in the usual manner. When the animal exhibits the first symptoms of hypoglycemia, the trachea is intubated and respiration is maintained artificially after spontaneous respiratory movements cease. Transfusions of whole blood are given to aid in supporting blood pressure.

While progress has not been made toward our major objectives, some pertinent findings have been noted. Blood pressure progressively decreases as the animal becomes flaccid in hypoglycemia, and the central vasomotor mechanism ceases to function shortly after respiratory movements stop. While it is easy to substitute for the lost respiratory function, it has so far been impossible to restore blood pressure, although we have been able to maintain it at a very low level for a few hours. The transfusion of whole blood will increase blood pressure for short periods, but even the injection of very large amounts of blood, more than the estimated total amount of the animal's blood volume, will restore blood pressure for only a short period. The very small amount of glucose in the blood appears to be more effective in increasing the blood pressure than the increase of blood volume.

Cardiac action and a low blood pressure have been maintained for several hours after respiratory movements had ceased. The reducible substances in the blood were at very low values, indicating that the organism was practically glucose free. No evidence of activity of the central nervous system could be detected. The injection of glucose restored respiration and partially restored blood pressure, many of the reflexes returned and uncoordinated movements occurred. However, there was no evidence of return of cerebral function.

SUMMARY

The maintenance of a definite concentration of glucose in the blood is a physiologic constant. If the blood sugar decreases below a certain critical level, definite and characteristic symptoms appear, followed by death. The physiologic responsibility for maintaining a life supporting amount of glucose in the blood belongs to the liver, but many extrahepatic factors and mechanisms cause variations of the blood sugar to occur. The major symptoms and death in hypoglycemia are due to the effect of the lack of an adequate amount of glucose for the central nervous system, which requires the presence of glucose in order to function. Glucose is essential for life in the higher organisms and appears to be as irreplaceable as oxygen.

FIBRIN FOAM AS A HEMOSTATIC AGENT IN REHABILITATION NEUROSURGERY

MAJOR BARNES WOODHALL
MEDICAL CORPS, ARMY OF THE UNITED STATES

The introduction by Ingraham and Bailey [1] of fibrin foam [2] as a hemostatic agent in neurologic surgery marks a technical advance as significant as the earlier introductions of the silver clip and the electrocautery. The control of hemorrhage from small or moderate sized vessels in the brain or spinal neuroaxis by electrocoagulation or clipping is relatively standardized and has been proved satisfactory. The control of capillary bleeding from the substance of the brain or spinal cord, from small vessels over the surface of the medulla or spinal cord or from the vascular supply of peripheral nerves cannot be accomplished by these destructive measures. Nor is it feasible to control gross hemorrhage from tumor beds or lacerated venous sinuses by these technics. For these purposes, cotton patties soaked in warm saline solution or muscle stamps have been used. As Ingraham has pointed out, everyday experience has indicated that these methods may be both time consuming and ineffectual in securing complete hemostasis and, in addition, the use of muscle may be followed by considerable tissue reaction.

Ingraham has recounted the history of the search for an adsorbable hemostatic agent culminating in that prepared from material entirely of human origin by Bering.[3] In the same paper microscopic studies in

From the Neurosurgical Section of the Walter Reed General Hospital, Washington, D. C.

1. Ingraham, F. D., and Bailey, O. T.: The Use of Products Prepared from Human Fibrinogen and Human Thrombin in Neurosurgery: Fibrin Foams as Hemostatic Agents; Fibrin Films in Repair of Dural Defects and in Prevention of Meningocerebral Adhesions, J. Neurosurg. **1**: 23-39 (Jan.) 1944. Ingraham, F. D.; Bailey, O. T., and Nulsen, F. E.: Studies on Fibrin Foam as a Hemostatic Agent in Neurosurgery, with Special Reference to Its Comparison with Muscle, ibid. **1**: 171-181 (May) 1944.

2. This substance was developed under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Harvard University.

3. Bering, E. A., Jr.: Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation: XXII. The Development of Fibrin Foam as a Hemostatic Agent for Use in Conjunction with Human Thrombin, J. Clin. Investigation, to be published.

animals and further clinical and microscopic studies in 95 neurosurgical procedures in man have established the present hemostatic value of fibrin foam and the negligible tissue reaction incident to its use. Through the courtesy of Dr. Franc Ingraham and the members of the Department of Physical Chemistry of Harvard Medical School, fibrin foam was made available to the Neurosurgical Section of the Walter Reed General Hospital in the fall of 1943. Since Jan. 1, 1944 increased production of this substance has allowed its use in a total number of 226 neurosurgical operations. The general character of the diagnoses for which these operations were performed are listed in the accompanying table.

These cases do not represent a valid numerical cross section of material commonly treated in an Army Neurosurgical Center, nor do they indicate necessarily procedures in which there exists a definite need for fibrin foam as a hemostatic agent. They do represent a group of neurosurgical operations in which the value of fibrin foam was explored or in which it was used for some specific technical purpose in which complete hemostasis was desirable. The field of rehabilitation or reparative military neurosurgery is a restricted one. Its paramount task lies in the treatment of nerve injuries

Neurosurgical Operations in Which Fibrin Foam Was Used

	Number
Rupture of intervertebral disk	102
Peripheral nerve injury	86
Tantalum plating of skull defect	23
Craniotomy for brain tumor	9
Laminectomy	5
Acute cerebral laceration	1
	226

by the procedures of neurolysis, neurorrhaphy or nerve grafting. Next in importance is the evaluation of the sequelae of head injuries and, in particular, the repair of skull defects and associated pathologic changes in the dura and brain. In addition to actual war casualties, the military neurosurgeon in the zone of the interior must treat casual illness and injury among military personnel, and of these the most important from the point of view of numbers is that of rupture of an intervertebral disk. Finally, to the Neurosurgical Center gravitate cerebral and spinal cord tumors. Acute cerebral injuries are comparatively rare.

It is apparent then that specific problems in hemostasis may arise in this restricted but, at the moment, important field of neurosurgery. They may be listed as the control of hemorrhage from extrinsic nerve scar, from nerve ends prepared for suture or grafting, from repair of dural or cerebral cicatrices, from extradural spinal veins and finally from tumor beds. It seems obvious that such experience may be transposed readily to the neurosurgery of more active theaters. The characteristics and clinical usage of fibrin foam may be illustrated best by comment on individual cases:

CASE 1.—*Rupture of an intervertebral disk. Hemilaminectomy. Reexploration.*

E. D. B., T/5, aged 31, developed the classic symptoms and signs of a rupture of the intervertebral disk at the fifth lumbar interspace on the left side, and the diagnosis was confirmed by pantopaque myelography.

On March 1, 1944, after resection of the ligamentum flavum at the fifth lumbar interspace on the left side, a large herniated nucleus pulposus was removed. Prior to removal the extradural veins had been collapsed by cotton patties. When these patties were lifted from the operative field a vigorous venous hemorrhage ensued. After the point of bleeding had been cleared with suction, a small, irregular mass of fibrin foam was applied over the bleeding area and gently compressed with a moist saline pledget. The hemorrhage ceased at once. The nerve root was allowed to assume its normal position and was covered with several additional masses of fibrin foam, filling the interlaminar defect. A severe contralateral sciatica developed and on March 21 the operative area was reexplored in the course of its relief. The fibrin foam had degenerated or had been adsorbed to some extent and remained as irregular, friable fragments. The spinal root of the first sacral was freely movable and not adherent to adjacent structures. The sciatica subsided after decompression of the first sacral root on the left.

The control of this relatively uncomplicated type of hemorrhage justifies a brief description of fibrin foam for those who are unfamiliar with its characteristics and usage. Fibrin foam is prepared from human fibrinogen and human thrombin and in the dry state appears dull white, dry and brittle. A fairly large mass of fibrin foam is packaged sterile in a dry state with a vial of dried human thrombin. A third vial contains 30 cc. of sterile isotonic solution of sodium chloride. At the operating table the thrombin is dissolved in the saline solution by means of vigorous stirring. Rather large fragments of fibrin foam are dropped into the thrombin solution. Further stirring will cause fragmentation of the fibrin foam into pieces too small for practical use. Fragments of the foam may then be cut or formed as the technical situation demands. As prepared at present the amount is sufficient for craniotomy. It may be used economically for successive disk or nerve cases by removal of a single fragment of foam prior to operation and by aspiration of sufficient thrombin solution to penetrate the fibrin matrix of this fragment.

The use of fibrin foam for the control of venous hemorrhage incidental to removal of a herniated nucleus pulposus appears to be a distinct contribution to more refined disk surgery. Such hemorrhage may be controlled by pressure of a warm saline pledget of cotton or by a muscle stamp. It is vastly simplified by the use of fibrin foam. From the single observation made twenty-one days after hemilaminectomy, it likewise appears that fibrin foam may prevent adherence of the nerve root to adjacent tissues and may prevent as well scar tissue formation from a resolving postoperative hematoma in the region of the laminal interspace. Both sequelae of disk surgery may account for residual or recurrent postoperative sciatic pain.

CASE 2.—*Mortar shell injury to peroneal and tibial nerves. Neurolysis. Neurorrhaphy.*

C. G. H., 2d lieutenant, aged 31, received multiple wounds from mortar shell fragments on Jan. 21, 1944, including one in the right popliteal space. Neurologic examination suggested a complete section of the common peroneal nerve and an incomplete lesion of the tibial nerve. On April 17 the injured area was explored. An end to end tantalum wire suture of the common peroneal nerve and a neurolysis of the tibial nerve were performed. Regeneration has proceeded at a normal rate since operation.

The methods for the control of hemorrhage from the involved peripheral nerves in this case by the use of fibrin foam were identical with those followed in the

remaining cases of this series. It is not an uncommon accident during neurolysis or transposition of a peripheral nerve to divide a longitudinal or entering epineural artery or vein. Such hemorrhage closely adjacent to living axons cannot be controlled by the application of a silver clip or by the use of the electrocautery. The application of a 3 to 4 millimeter fragment of fibrin foam, followed by pressure exerted on a moist cotton pattie, controls such hemorrhage completely and should not be followed by tissue reaction seen after the use of a muscle stamp. The fibrin foam mass should be left in place. Excessive hemorrhage from nerve ends transected for nerve suture or nerve grafting may militate against the success of the intended procedure. The patient, successive application of foam fragments with firm pressure conducted through moist cotton pledgets will eventually control this troublesome hemorrhage. No resultant edema or other changes in the structure of the nerve ends have been observed. No opportunity has developed to study foam fragments at secondary operation in such injuries.

CASE 3.—*Resection of cerebral cicatrix. Tantalum plating of skull defect.*

A. J. L., 2d lieutenant, aged 25, sustained a mortar shell injury of the right parietal region of the skull on Dec. 23, 1943 with involvement of scalp, skull, dura and cerebral tissue. Débridement was done within ten hours of the injury and the convalescence was uneventful. On admission to the Walter Reed General Hospital on March 25, 1944 he showed a residual and rapidly clearing left hemiplegia and an oval pulsating defect in the right parietal area. Electroencephalography revealed high voltage 2 to 3 second waves with slow wave, out of phase focus over the site of injury. On May 10 a shallow cortical scar was resected and the skull defect repaired with tantalum. Postoperative study of electrical activity of the cortex showed much improvement with abnormal waves appearing only with hyperventilation.

In this instance the area of cortical resection was filled with broad, thin sheets of fibrin foam, approximately 2 to 5 mm. thick, with prompt cessation of hemorrhage. This procedure has been followed in other scar resections with equal success. In all cases requiring skull defect repair the extradural bleeding that may follow revision of the dura has been controlled by small fragments placed between dura and bone, insuring complete hemostasis beneath the plate.

CASE 4.—*Resection of occipital lobe and glioblastoma.*

W. L. B., private, aged 23, a Negro, developed headache, vomiting, diminished visual acuity and mental confusion over a period of three months. On admission, neurologic examination noted irrationality and confusion with cervical rigidity, minimal papilledema and no localizing signs of import. Ventriculography disclosed a cyst with ragged, irregular contours in the right occipital lobe. On May 12, 1944 the right occipital lobe was resected through the confluence of the body and posterior horn of the lateral ventricle. During this procedure a large posterior cerebral vein tore away from the longitudinal sinus. The ensuing venous hemorrhage was promptly and permanently controlled by a thick stamp of fibrin foam, held in place by firm pressure over a moist cotton strip. Convalescence from craniotomy was uneventful.

In eight more or less similar cerebral resections for tumor, either oozing from cerebral tissue or massive arterial and venous hemorrhage from tumor bed or sinus apertures have been controlled effectively. A striking example of the effectiveness of this hemostatic agent is afforded by a perusal of the following case:

CASE 5.—*Complete removal of acoustic neurinoma, right.*

S. K., T/3, aged 26, was operated on in an overseas theater for cerebellar tumor. The procedure was terminated prematurely because of excessive hemorrhage from the right lateral recess. The neurologic findings were typical of a cerebellopontine angle tumor on the right. On April 20, 1944 a right acoustic neurinoma was resected completely. Diffuse, moderately severe hemorrhage from poorly visualized vessels lying along the lateral and anterior borders of the pons was controlled readily by the application of narrow strips of fibrin foam. On April 28 the craniotomy wound was reexplored because of hyperpyrexia and increased intracranial pressure. The lateral recess was clear and the fibrin foam could be seen as an irregular, reddish brown, granular mass without significant tissue reaction. The operative area was sterile. Following spinofacial anastomosis the patient was sent on a therapeutic furlough.

CASE 6.—*Bifrontal, compound, depressed skull fracture with cerebral laceration.*

B. L., corporal, aged 24, was engaged in welding a 50 gallon steel drum when an explosion of unknown origin occurred. A fragment of steel penetrated above the nasion; its removal was followed by drainage of brain tissue and cerebrospinal fluid from the laceration and from the nose. A débridement was carried out twenty-four hours after the injury through a transverse, midfrontal laceration 9 cm. long. The medial and inferior surfaces of both frontal lobes were extensively lacerated. After electrocauterization of moderate sized arteries and veins, diffuse hemorrhage persisted in spite of warm saline cotton packs. This bleeding was controlled instantly by the application of thin, round disks of fibrin foam. Bilateral dural grafts were sutured in place and the soldier has returned to duty.

This experience, although an isolated one, justifies a thorough clinical trial of this hemostatic agent in the field of acute cerebral injuries.

SUMMARY

Fibrin foam has been used as a hemostatic agent in 226 neurosurgical operations completed in an Army Neurosurgical Center. The technical procedures have consisted of peripheral nerve neurolysis, neurorrhaphy and nerve graft, excision of cerebral scar with tantalum plating of skull defects, hemilaminectomy for rupture of an intervertebral disk, craniotomy for tumor, laminectomy and débridement for acute cerebral injury. In each instance the desired hemostatic effect has been secured promptly and has contributed in large measure to the execution of the particular operation. No clinical untoward reactions that could have been attributed to the use of fibrin foam have been observed. There were but two opportunities to observe a possible tissue reaction to fibrin foam, and these negative observations were consistent with those previously reported. The application of this method of hemostasis to war injuries of the brain seems most promising.

Hypochondriasis.—Hypochondriasis may be found as a mental habit in a fairly large group of individuals of medium intelligence who have led narrow lives without many interests and who have been prone to accept the statements found in newspapers relative to medicine and advertisements in good faith. They are prone to interpret mild physical discomforts due to fatigue, position or unhygienic living as symptoms of serious physical illness and to react accordingly. It is often most difficult to change their delusions about themselves. They will not even accept the reassurances of the family doctor that they do not show any symptoms of the disease of which they complain, as he cannot tell how they feel. They know they have heart disease because they are so short of breath when they go upstairs, etc.—Davis, John E.: Principles and Practice of Rehabilitation, New York, A. S. Barnes & Co., Inc., 1943.

THE MALE CLIMACTERIC, ITS SYMPTOMATOLOGY, DIAGNOSIS AND TREATMENT

USE OF URINARY GONADOTROPINS, THERAPEUTIC TEST WITH TESTOSTERONE PROPIONATE AND TESTICULAR BIOPSIES IN DELINEATING THE MALE CLIMACTERIC FROM PSYCHONEUROSIS AND PSYCHOGENIC IMPOTENCE

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DETROIT

During the past few years several articles [1] have been published in medical journals about a syndrome occurring in middle aged men which has been termed the male climacteric. The syndrome has been characterized principally by nervousness, psychic depression, impaired memory, the inability to concentrate, easy fatigability, insomnia, hot flashes, periodic sweating and loss of sexual vigor. The chief basis for the diagnosis of male climacteric in published reports has been the similarity of the symptoms to those of the female menopause and the relief sometimes afforded by androgenic therapy. The claim has been made [2] that most men and all women pass through the climacteric during the fifth decade and that the diagnosis of male climacteric is frequently missed. Quite recently this concept has been popularized by Paul de Kruif in the July 1944 issue of *Reader's Digest,* and physicians are deluged with requests for treatment by hopeful readers.

No objective evidence has been brought forward to prove that the male climacteric is an actual clinical entity or to differentiate it conclusively from psychoneurosis or psychogenic impotence. In fact, ordinary clinical experience arouses considerable skepticism as to the existence of the male climacteric because of (*a*) the similarity between symptoms attributed to this syndrome and those referable to psychoneurosis, (*b*) the retention of fertility by most men well into old age, (*c*) the absence of regressive changes in secondary sexual characteristics of most elderly men comparable to those which customarily occur in women after the menopause. In most elderly women there are unmistakable signs of ovarian failure, namely atrophy of the uterus, vagina, external genitalia and breasts, a deepening of the voice, a tendency toward hirsutism and a loss of feminine bodily contours. In contrast, most elderly men exhibit no physical signs of testicular failure: genitalia and secondary sexual characteristics show no regressive changes, beard and bodily hair remain intact, and bodily contours remain masculine. Skepticism toward the existence of the male climacteric is clearly expressed in a recent editorial in THE JOURNAL.[3]

Our purpose in this communication is to present evidence which will provide answers to the following questions: 1. Is there an organic basis for justifying the claim that the male climacteric is a true clinical entity? 2. Is it possible to distinguish between the male climacteric and psychoneurosis or psychogenic impotence either clinically, by laboratory methods or both? 3. If the syndrome exists, what therapy is advisable? 4. Is the male climacteric a normal accompaniment of the aging process or is it a pathologic problem?

To answer the foregoing questions we needed some objective criterion of testicular function. It seemed likely that the titer of urinary gonadotropins might reflect gonadal function in the male as well as in the female.

An elevation in the titer of gonadotropins excreted in the urine has proved to be an accurate index of ovarian failure. This invariably accompanies the naturally occurring female menopause [4] and follows bilateral oophorectomy within one to four weeks.[5] The elevated titers of urinary gonadotropins persist for the remainder of the patient's life.[4] There is considerable evidence to suggest that the abnormally great excretion of gonadotropins is due to failure of utilization of this hormone by the nonfunctioning ovaries.[6] Therefore it was decided to perform gonadotropic assays in the male.

Before gonadotropic assays could be used for the differentiation between the male climacteric and psychoneurosis, it was necessary to determine whether elevations truly reflected testicular insufficiency. Therefore determinations were made in a series of normal controls ranging from 22 to 98 years of age and in a group of men with known failure of testicular function. The assays were performed in an identical manner on patients complaining of symptoms claimed to be associated with the male climacteric. In addition, microscopic examination of testicular biopsy specimens was made in some of the cases.

METHODS

Urinary gonadotropic excretion was determined on specimens collected during a twelve hour overnight period. These were concentrated by precipitating the protein gonadotropins with 95 per cent ethyl alcohol, subsequently dialysing off toxic substances and reprecipitating with 95 per cent ethyl alcohol. The final precipitate evolving from this procedure was dissolved in 6 cc. of tap water and injected into an immature (22-24 day old) female albino rat in 1 cc. portions twice

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The study was supported in part by grants from the Schering Corporation, Bloomfield, N. J., through the courtesy of Dr. Max Gilbert, and from Frederick Stearns & Co., Detroit, through the courtesy of Dr. Richard M. Johnson.

1. Werner, A. A.: The Male Climacteric: Additional Observations of 37 Patients, J. Urol. **49:** 872-882 (June) 1943. Dunn, C. W.: Diagnosis and Treatment of Testicular Deficiency—Male Hormone Therapy, M. Clin. North America **26:** 1876-1895 (Nov.) 1942. Lamar, C. P.: Clinical Endocrinology of the Male, with Especial Reference to the Male Climacteric, J. Florida M. A. **26:** 398-404 (Feb.) 1940. Donald, H. R.: Observations on the Male Climacteric, Clin. J. **67:** 323-330 (Aug.) 1938. Werner, A. A.: The Male Climacteric, J. A. M. A. **112:** 1441-1443 (April 15) 1939. Thomas, H. B., and Hill, R. T.: Testosterone Propionate and the Male Climacteric, Endocrinology **26:** 953-954 (June) 1940.

2. Douglas, R. J.: The Male Climacteric: Its Diagnosis and Treatment, J. Urol. **45:** 404-410 (March) 1941.

3. Climacteric in Aging Men, editorial, J. A. M. A. **118:** 458-460 (Feb. 7) 1942.

4. Heller, C. G., and Heller, E. J.: Gonadotropic Hormone: Urine Assays of Normally Cycling, Menopausal, Castrated and Estrin Treated Human Females, J. Clin. Investigation **18:** 171-178 (Oct.) 1939.

5. Heller, C. G.; Farney, J. P.; Morgan, D. N., and Myers, G. B.: The Development and Correlation of Menopausal Symptoms, Vaginal Smear and Urinary Gonadotropin Changes Following Castration in 27 Women, J. Clin. Endocrinol. **4:** 101-116 (March) 1944.

6. Heller, C. G.; Heller, E. J., and Sevringhaus, E. L.: Does Estrogen Substitution Materially Inhibit Pituitary Gonadotropic Potency? Endocrinology **30:** 309-316 (Feb.) 1942.

daily for three days.[7] The amount of the gonadotropic hormone in the concentrate was determined biologically from the increase in weight of ovaries and uterus at autopsy performed sixteen to twenty-four hours after the last injection was made. It was found expedient to express gonadotropic activity in terms of actual ovarian weights elicited by the concentrate of each twelve hour specimen. Normal ovarian weights for the strain of rats used ranged from 8 to 16.2 mg. and averaged 12 mg.

Histologic technics used on the biopsy specimens of the testes were routine hematoxylin and eosin stains, Masson's trichrome stain and Giemsa's stain.

RESULTS IN MEN WHOSE TESTICULAR FUNCTION HAD BEEN DEFINITELY ESTABLISHED

Urinary gonadotropic titers of 25 normal men are contrasted with those of 12 surgical castrates and 8 functional prepuberal castrates in chart 1 and table 1.

Normal Men.—Among the normals, all decades were represented from the third through the tenth. All the normal men gave histories of normal sexual function and none had symptoms suggestive of the climacteric. The presence of normal testes was confirmed by biopsy in 10 men, 7 of whom were in the sixth decade or beyond. The 17-ketosteroid excretion was considered normal in 12 cases in which this assay was performed. None of the normals excreted sufficient gonadotropins to cause detectable stimulation of the ovaries of the assay rats. This was evident by the fact that the average ovarian weight after injection with concentrates of the urine of the normal men was only 12.3 mg.,[8] which is similar to the ovarian weights in uninjected control rats.

Castrated Men.—In contrast, all 12 castrates excreted large amounts of gonadotropins, as shown by the fact that urinary concentrates caused a fivefold increase in the weight of the ovaries of the assay rats (table 1). The average ovarian weight of rats injected with concentrates of urine from castrate males was 62.6 mg., as compared with 12.3 mg. for rats injected with concentrates of urine from normal males. The striking increase in ovarian weight was due partly to follicular maturation and partly to corpus luteum formation. This indicated that the urine of castrate men contained excessive quantities of either of two separate gonadotropic hormones, one capable of stimulating the growth of ovarian follicles in the female or seminiferous tubules in the male (follicle stimulating hormone), the other capable of producing luteinization in the female or of stimulating the interstitial cells of the male (luteinizing hormone).

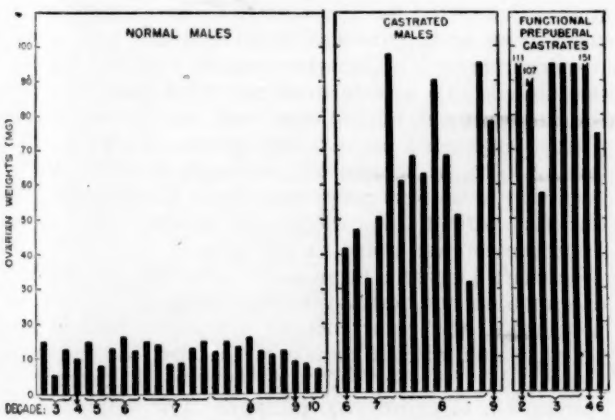

Chart 1.—Urinary gonadotropic titers.

TABLE 1.—*Gonadotropic Hormone Titers in Cases of Known and Unknown Testicular Function*

	Clinical Category	No. of Cases	No. of Assays	Ovarian Weight, Mg.
Normal controls	Normal males.....	25	47	12.3
Controls consisting of cases of proved testicular failure	Castrated males.....	12	30	62.6
	Functional prepuberal castrates *.....	8	36	86
	Seminiferous tubule failure *.....	20	74	80.7
Experimental groups	Psychoneurotic males.	15	25	13.3
	Male climacterics.....	23	109	52.8

* All these subjects were proved to have testicular failure by microscopic examination of a testicular biopsy specimen taken in each instance.

Further evidence for the direct correlation between gonadotropic titers and testicular function was obtained in 6 patients on whom gonadotropic assays were performed before castration and one month or more after castration. The preoperative titers were normal, the average ovarian weight of assay rats being 12 mg. This was interpreted as indicating normal testicular function. Microscopic examination of the ablated testes showed them to have normal structure, which confirmed the impression that these men had normal testicular function preoperatively. The gonadotropic titers after castration were high, the average ovarian weight of assay rats being 58 mg. The elevation of gonadotropins is probably due to failure of utilization by the ablated testes, which normally metabolize this hormone. Therefore the rise of gonadotropins is interpreted as a reflection of testicular failure.

Functional Prepuberal Castration in Men.—Elevated gonadotropins were also observed in cases of spontaneous prepuberal destruction of the testes. This was seen in 8 cases in which operation revealed either the absence or the complete atrophy of the testes associated with wolffian duct derivatives in the scrotum [9] (chart 1 and table 1).

Hyalinization of Seminiferous Tubules and Clumping of Leydig Cells.—From a third type of primary failure of the testes we obtained additional corroboration of the fact that when the testis fails, in the absence of pituitary disease, there is aways a compensatory rise in urinary gonadotropins. In this syndrome, only recently described by Klinefelter, Reifenstein and Albright [10]

7. Heller, C. G., and Chandler, R. E.: Gonadotropic Hormone: Modification of the Alcohol Precipitation Assay Method, J. Clin. Endocrinol. **2**: 252-253 (April) 1942. Heller, C. G.; Lauson, H., and Sevringhaus, E. L.: The Immature Rat Uterus as an Assay End Point for Gonadotropic Substances, Am. J. Physiol. **121**: 364-378 (Feb.) 1938.

8. The titers for the normal males in this series compare favorably with the low titers established for normal males by Heller, E. J.; Heller, C. G., and Sevringhaus, E. L.: Gonadotropic Hormone: Assays of Human Male Urine, Endocrinology **29**: 1-7 (July) 1941.

9. Heller, C. G.; Nelson, W. O., and Roth, A. A.: Functional Prepuberal Castration in Males, J. Clin. Endocrinol. **3**: 573-588 (Nov.) 1943.

10. Klinefelter, H. F., Jr.; Reifenstein, E. C., Jr., and Albright, F.: Syndrome Characterized by Gynecomastia, Aspermatogenesis Without A-Leydigism and Increased Excretion of Follicle Stimulating Hormone, J. Clin. Endocrinol. **2**: 615-627 (Nov.) 1942.

and by Heller and Nelson,[11] a definite correlation has been established between the hyalinization of the seminiferous tubules, Leydig cell failure and elevated gonadotropins. The elevation of gonadotropins can be seen for 20 of our cases in table 1.

Thus, in every proved case of primary gonadal failure, impaired or absent gonadal function was accompanied by a rise in urinary gonadotropic excretion. The high concentrations of gonadotropins in the urine were in striking contrast to the low titers encountered in normal men of the same age. Therefore it was felt the gonadotropic titer could be safely utilized as a measure of gonadal failure in cases showing symptoms suggestive of the male climacteric.

RESULTS IN MEN WHOSE TESTICULAR FUNCTION WAS UNDER INVESTIGATION

Urinary gonadotropic assays were performed on a series of 38 men, all of whom complained of constitutional and psychic symptoms more or less resembling those of the female menopause. In addition, 32 of the 38 patients complained of impotence. On the basis of the results of the assays, the cases could be sharply

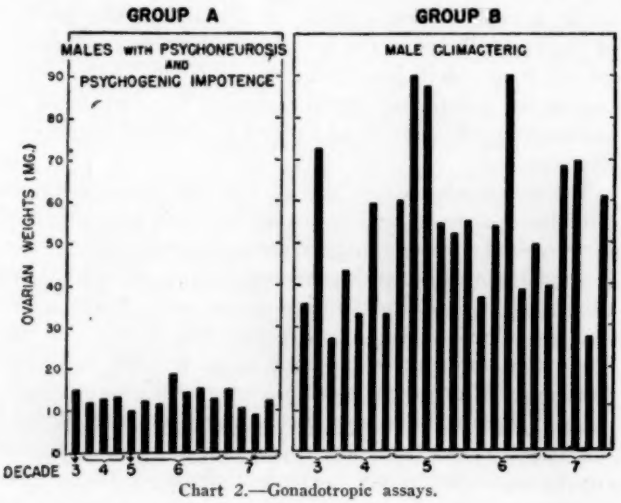

Chart 2.—Gonadotropic assays.

subdivided into two groups, designated temporarily as groups A and B.

A. Normal gonadotropic assays were obtained in 15 of the 38 patients. The average assay ovarian weight was 13.3 mg. for this group of 15 and compared very closely with the figure of 12.3 mg., which was the average assay ovarian weight for the 25 normal males. The striking uniformity of individual cases in the two groups is evident from a comparison of charts 1 and 2. From the fact that the gonadotropic titers of the cases in group A corresponded with those of normal males it was concluded that testicular failure had not occurred.

B. High gonadotropic assays were obtained in 23 of the 38 patients. The titer of each of the 23 cases was unequivocally higher than any titer obtained in the 15 cases in group A or any titer in the 25 normal control cases, as is evident from studying charts 1 and 2. The amount of gonadotropic hormone excreted in these 23 cases corresponded closely to that excreted by the castrated controls. The average assay ovarian weight of the 23 cases in group B was 52.8 mg. as compared with 62.6 mg. for the castrated controls and contrasted with 12.3 mg. and 13.3 mg. for the normal controls and the 15 cases in group A, respectively. It was concluded that these 23 men in group B had testicular failure.

Testicular biopsies were performed in 8 of the 23 cases in group B as a check on the reliability of gonadotropic assays in predicting testicular failure. Histologic evidence corroborating the presence of testicular failure was obtained in all 8 cases. In 5 instances the biopsies revealed reduction in size and in activity of the seminiferous tubules and reduction in the size and number of Leydig cells. The latter were abnormal in granulation and lipid content. In 3 cases the biopsy findings simulated those of Klinefelter's syndrome[11] and are described in detail by Nelson.[12]

Therapeutic test was applied in 29 cases, including 9 from group A and 20 from group B. The therapeutic test consisted in an evaluation of the clinical response to testosterone propionate[13] given intramuscularly in doses of 25 mg. five times weekly for two to four weeks.

Results of the Therapeutic Test in the Patients with High Gonadotropins (Group B).—Definite improvement in the symptomatology was noted by the end of the second week in all of the 20 cases treated. Complete abolition of all vasomotor, psychic, constitutional and urinary symptoms (table 2) was accomplished by the end of the third week in 17 of the 20 cases treated. In the remaining 3 cases vasomotor and urinary symptoms were abolished but the psychic and constitutional symptoms persisted despite continuation of treatment for several months and doubling the dosage for brief periods. It was concluded that these three persons were suffering from involutional melancholia. Sexual potency was restored to normal with these doses in all but 2 cases, in 1 of which involutional melancholia was present. With an increase in dosage of testosterone propionate to 50 mg. five times weekly, sexual vigor in both previously refractory cases exceeded that of normal men.

In 14 cases therapy was subsequently withheld for from four to fifteen weeks and in all instances the symptoms returned and sexual potency was again lost. On resumption of the therapy with testosterone propionate, relief from symptoms was again afforded and sexual potency returned. Thus the specificity of therapy was established. To investigate further the possibility that the improvement might have been due to suggestion, placebo injections were administered. Ampules containing 1 cc. of sesame oil, packaged similarly to the original testosterone propionate, were substituted without the patient's knowledge in several cases. No improvement was noted in any case.

In chart 3 a case is presented to illustrate the abolition of symptoms and restoration of potentia by testosterone propionate, the recurrence of symptoms and loss of potency after discontinuance of therapy, the failure of sesame oil placebo and the subsequent control by resumption of androgenic therapy. The results of the therapeutic test provide confirmatory evidence that the symptoms and loss of potentia in the group with elevated gonadotropins (group B) were due to testicular failure.

Results of the Therapeutic Test in the Patients with Normal Gonadotropins (Group A).—Of the 9 men subjected to the therapeutic test 7 had loss of sexual

11. Heller, C. G., and Nelson, W. O.: Hyalinization of the Seminiferous Tubules Associated with Normal or Failing Leydig Cell Function: Discussion of Relationship to Eunuchoidism, Gynecomastia, Elevated Gonadotrophins, Depressed 17-Ketosteroids and Estrogens, J. Clin. Endocrinol., to be published.

12. Nelson, W. O., and Heller, C. G.: Hyalinization of Seminiferous Tubules and Clumping of Leydig Cells: Microscopic Picture in the Testis and Associated Changes in the Breast, J. Clin. Endocrinol., to be published.

13. The testosterone propionate, free testosterone pellets, solution of methyl testosterone for sublingual use and the methyl testosterone tablets for oral use were furnished by Dr. Max Gilbert of the Schering Corporation, Bloomfield, N. J.

potency and 8 had some of the other symptoms listed in table 2. In 3 instances there was evanescent improvement in symptomatology noted during the first week of therapy. However, by the end of the second to fourth weeks none of the 9 patients demonstrated any improvement whatever in either the general symptomatology or the sexual vigor.

The results of the therapeutic test in the group with normal gonadotropins (group A) provide confirmatory evidence that loss of potentia and symptoms in these patients were not due to testicular failure. This conclusion was corroborated by the fact that normal men experience little, if any, increase in sexual potency or in well being by taking the male sex hormone.

Symptomatology.—By the foregoing objective tests the 38 cases could be sharply separated into two groups: A, consisting of 15 patients having normal testicular function as evidenced by normal gonadotropic excretion and failure to respond to the therapeutic test; B, consisting of 23 patients having testicular failure as evidenced by high gonadotropin output, comparable to castrates, histologic evidence of testicular degeneration and specific response to the therapeutic test.

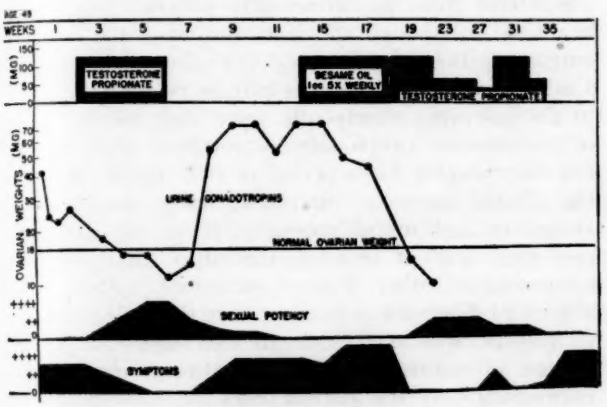

Chart 3.—Therapeutic test.

Symptoms Encountered in the Group with Testicular Failure.—After the symptoms of the group with elevated gonadotropins were analyzed it was evident that they fell into five categories: (1) vasomotor, (2) psychic, (3) constitutional, (4) urinary and (5) sexual. The various symptoms classified in this manner are listed in table 2.

The urinary frequency and hesitancy and decrease in size and force of the stream are undoubtedly related to enlargement of the prostate and decreased bladder tonus which accompany testicular failure. The urinary symptoms are relieved by testosterone, in all probability, because of improvement of bladder tonus, not because of any direct effect on the prostate.

The vasomotor, psychic and constitutional symptoms are identical with those encountered in the female menopause. Of course, no patient exhibited all of the symptoms listed. The most constant symptom was the loss of sexual potency, which was a complaint of all 23 patients. This was usually but not invariably accompanied by loss of libido. Psychic and constitutional symptoms, particularly nervousness and fatigability, were also invariably present. A somewhat less frequent but more characteristic symptom was hot flashes identical with those described by menopausal women. A significant feature from a diagnostic standpoint was the tendency for loss of sexual potency, hot flashes and nervousness to make their appearance concurrently. While the onset was never fulminant, the patient could usually tell the month or season the symptoms began. The etiologic relationship between the symptoms in table 2 and the testicular failure was borne out by the specific relief afforded by androgens, the recurrence after cessation of androgenic therapy and unresponsiveness to placebos.

Symptoms Encountered in the Group with Normal Testicular Function.—The majority of the men in group A also complained of loss of potency usually accompanied by psychic and constitutional symptoms resembling those of group B and occasionally by vasomotor and urinary symptoms listed in table 2. A notable difference was the rarity of true hot flashes in group A. Often the symptoms had been present for most of the patient's adult life or occasionally had been very abrupt in onset, coincident with some psychic trauma.

TABLE 2.—*Symptoms According to Categories*

1. Vasomotor:	hot flashes
	chilliness
	sweating
	palpitation
	increased pulse rate
	headache
2. Psychic:	nervousness
	irritability
	insomnia
	depression
	self depreciation
	antisocial tendencies
	crying spells
	suicidal tendencies
	paresthesias
	pruritus
	inability to concentrate
3. Constitutional:	weakness
	fatigue
	muscle pains
	muscle cramps
	arthralgia
	anorexia
	nausea and vomiting
	abdominal pain
	constipation
	weight loss
4. Urinary:	decreased force
	decreased size
	frequency
	hesitancy
5. Sexual:	diminution of libido
	decreased erections

COMMENT

At the conception of this investigation four questions were postulated. On the basis of the data presented, an attempt will now be made to answer each question.

1. *Is there an organic basis for justifying the claim that the male climacteric is a true clinical entity?* This is answered in the affirmative by the finding of testicular failure in 23 of the patients studied. The objective evidence for the testicular failure consisted of (*a*) elevation in gonadotropic excretion, comparable quantitatively with that occurring in castrated males and men with primary gonadal failure; (*b*) histologic signs of testicular atrophy or degeneration in all eight cases subjected to testicular biopsy. The etiologic relationship between the demonstrated testicular failure and the

clinical picture was borne out by (*a*) the resemblance of the symptoms of this group of cases to that of the definitely established pattern of the female menopause, with the addition of occasional urinary symptoms and the invariable association of decrease in sexual potency; (*b*) the specific restoration of potency and alleviation of the menopausal-like symptoms by applying the therapeutic test of substitution therapy with androgens; (*c*) the reappearance of symptoms after withdrawal of androgens, and (*d*) the complete failure of placebos.

It was therefore concluded that these 23 patients were true examples of the male climacteric!

2. *Is it possible to distinguish between the male climacteric and psychoneurosis and psychogenic impotence, either clinically or by laboratory methods?* Presumptive differentiation may be made by a careful history combined with a therapeutic test. For a positive differentiation, however, laboratory tests are necessary. The assay of urinary gonadotropins provided a sharp distinction between known normal and known castrated men and an equally clearcut distinction between group A and the male climacterics (group B). By this means it was established that the climacteric patients had testicular failure and that group A did not.

This was further supported by the failure of the patients in group A to respond to the therapeutic test. It was therefore concluded that the symptoms of the patients in group A were not due to testicular failure and that the probable basis for the symptoms was psychoneurosis or psychogenic impotence!

On the basis of clinical symptomatology alone, a tentative but not an absolute differentiation can be made. The most important diagnostic points are: 1. Character of the symptoms: The symptom complex of the male climacteric corresponded much more closely to the female menopause than did the symptom complex of the average psychoneurotic. Typical hot flashes, identical with those occurring in the female menopause, are strongly suggestive of the male climacteric but occasionally may occur in psychoneurosis. On the other hand, the absence of hot flashes by no means excludes the diagnosis of the male climacteric. In fact, this symptom was absent in about 40 per cent of our cases. 2. The mode of onset: The diagnosis of male climacteric is strongly suggested when a past history is obtained of normal sexual function up until a definite month or season, at which time loss of potentia, hot flashes and nervousness appear simultaneously. A diagnosis of psychoneurosis is suggested when the symptoms have been present throughout adult life or are abruptly precipitated by psychic trauma. Often a careful history will uncover the emotional factors responsible for the impotence and symptoms of the neurotic. 3. The therapeutic test will aid in separating the two groups, since the climacterics can be expected to make a striking improvement, whereas the psychoneurotic usually do not show a specific response.

As the study progressed and the differences in the clinical pattern between the climacteric and the psychoneurotic became evident, a large number of the psychoneurotic were eliminated on a clinical basis. This accounts for the fact that 23 of the 38 patients in the series proved to be examples of the male climacteric and that only 15 psychoneurotic patients were investigated by laboratory methods.

3. *What therapy is advisable?* Before instituting treatment it is necessary to establish the diagnosis of the male climacteric and to exclude the following contraindications to androgens: (1) the presence or suspicion of carcinoma of the prostate in particular and any carcinoma in general, since the steroids have a carcinogenic action; (2) the presence of edema, since testosterone tends to produce sodium, and hence water, retention; (3) any case showing normal testicular function, since testosterone will inhibit spermatogenesis in normal males and may, in addition, cause disuse atrophy of the normal Leydig cells. In this connection we have followed the gonadotropic excretion in a normal man given a long course of testosterone propionate therapy and found that after discontinuance of the androgen the gonadotropins rose to levels corresponding to those following castration. Whether these changes are permanent or not is still uncertain, but it is entirely possible that ill advised treatment with testosterone may cause permanent sterility.

Therapeutic Test Suggested for Establishing the Diagnosis of Male Climacteric.—In clinical practice laboratory procedures that will positively differentiate climacteric from psychoneurotic patients may not be available. Although the testicular biopsy is a simple surgical procedure, it may not always be feasible. Under such circumstances it may be necessary to resort to the following therapeutic test: Administer 25 mg. of testosterone propionate by intramuscular injection five days weekly for a period of two weeks. Evaluate the clinical status at that time, noting the effect on symptoms and sexual potency. If, at the end of the two week trial of therapy, the patient has shown no improvement, either of two conclusions may be justifiable: (1) The patient does not have the male climacteric or (2) he will need such an excessively large daily dosage of testosterone that treatment is financially unpractical. If the patient does respond it may be necessary to determine whether the improvement is actually due to specific relief of testicular failure or whether it is merely due to suggestion. Withdrawal of therapy until symptoms return and then reinstitution of therapy with placebos may be required to settle the question.

If the diagnosis of the climacteric is positively established by these procedures and the response to the therapeutic test is satisfactory, the minimal dosage for control can next be determined by trial and error. In cases of complete testicular failure, satisfactory control will usually be obtained by administering 25 mg. of testosterone propionate three times weekly. In some cases injection of 25 mg. once a week will suffice. Rarely 10 mg. once or twice weekly may maintain a patient satisfactorily.

In our experience with cases in which a diagnosis of testicular failure has been clearly established, eunuchoids as well as climacteric patients, the use of methyl testosterone has been disappointing both by the oral and by the sublingual routes. The recommended oral dose of four to six times the injection dose was inadequate for satisfactory maintenance. Larger doses often caused nausea and vomiting and were too expensive to be practical. The sublingual use of methyl testosterone, either in solution or in tablet form, is not recommended because it has either been ineffective or

has produced undesirable reactions such as burning of the mouth, swelling of the gums, nausea, vomiting, heartburn, weakness of the legs, tinnitus, vertigo and headache.

If more than two intramuscular injections of testosterone propionate are necessary per week for maintenance effects, it is suggested that pellets of free testosterone be implanted subcutaneously in the thighs through a pellet injector. The implantation of 4 to 8 pellets weighing 75 mg. each will provide excellent control for periods of six to ten months.

4. *Can the average male expect to experience the male climacteric?* We believe not. Our conviction comes from observations of gonadotropic excretion in normal males, examination of testicular tissue removed at orchiectomy for carcinoma of the prostate in aged men, the sexual history of elderly normal men and the bodily configuration and physical examination of elderly men. All indicate that both the germinal and the hormonal function of the testes is preserved well into senility in the average man. Reduction of function is admitted, but fairly adequate maintenance occurs in most cases studied. In addition, it should be noted from chart 2 that the male climacteric is not confined to middle and old age but may occur as early as the third decade. The youngest patient in this series of male climacterics was 25 years of age.

Thus we conclude that, whereas in the female the menopause is an invariable and physiologic accompaniment of the aging process, in the male the climacteric is an infrequent and pathologic accompaniment of the aging process.

The demonstration that testicular failure is responsible for the male climacteric, a syndrome whose clinical manifestations are entirely subjective and easily confused with psychoneurosis, establishes an organic basis and physiologic treatment for a small segment of the large field encompassed by the term psychoneurosis.

SUMMARY

The diagnosis of the male climacteric was established in 23 cases by the finding of pronounced elevation in gonadotropic hormone excretion, comparable quantitatively to that occurring in castrates. This was corroborated in all 8 cases subjected to biopsy by histologic evidence of testicular atrophy and degeneration. The diagnosis was further supported in all 20 cases treated by specific response to a therapeutic test with androgens.

A clearcut differentiation of the male climacteric from psychogenic impotence was made by urine gonadotropic assays, which were decidedly elevated in the former group and normal in the latter. A simple therapeutic test is helpful in distinguishing between these two conditions.

The symptomatology of the male climacteric is different from that of psychoneurosis and psychogenic impotence. Satisfactory therapeutic results were obtained by intramuscular injections of testosterone propionate and by implantation of testosterone pellets but not by the oral or sublingual administration of methyl testosterone.

Although the male climacteric may occur as early as the third decade, it is a relatively rare syndrome, probably affecting only a small proportion of men who live into old age.

RECURRENCE RATES IN RHEUMATIC FEVER

THE EVALUATION OF ETIOLOGIC CONCEPTS AND CONSEQUENT PREVENTIVE THERAPY

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The clinical course of rheumatic fever is characterized by frequent recurrence of manifestations of the disease and a varying number of intercurrent years of freedom from symptoms. The average risk for a recurrence of rheumatic fever has never been defined. Current etiologic concepts and consequent preventive therapy are based in large measure on a comparison of the number of recurrences of rheumatic fever among experimental and control groups of rheumatic patients.

The majority of reported studies have been made on small groups of patients. It is rarely possible for any one investigator to assemble a representative series of sufficient size for adequate analysis. Conclusions are frequently drawn from the summated observations of several small but apparently comparable studies.

The pooling of experience is an acceptable practice, provided each study which is included represents a random selection in which experimental and control subjects have been selected alternately. This is essential in order to minimize the possibility of chance being responsible for any observed difference in the two groups. In addition, diagnostic criteria and observations must be uniform, environmental conditions and age constitution comparable. The published studies which have been summated in rheumatic fever do not appear to meet these basic requirements.[1]

To obtain a measure of the expected risk of overt recurrence of rheumatic fever, a series of 549 records of a representative group of rheumatic patients was selected for analysis. These patients were under continuous uniform medical supervision in the cardiac clinic.[2]

METHOD OF ANALYSIS

The usual procedure for constructing a life table was followed, using one person-year of life experience as the unit for study.[3] To obtain the rate of recurrence,

These studies were assisted by a grant from the Commonwealth Fund.
From the New York Hospital and the Department of Pediatrics, Cornell University Medical College.
Dr. Lowell J. Reed has shown continued interest and given constructive criticism during the progress of these studies.
Read in a symposium on "Rheumatic Fever" before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

1. Thomas, C. B.: The Prophylactic Treatment of Rheumatic Fever by Sulfanilamide, Bull. New York Acad. Med. **18:** 508, 1942. Paul.[3]

2. Only the records of patients whose onset and course of disease were accurately documented were included. In 50 patients the only recurrent attacks were growing and joint pains. These were not included in this presentation. Of the remaining 499 patients, 256 experienced one or more attacks of arthritis or chorea, alone or combined, and in 243 active carditis with or without chorea and arthritis characterized the course. The duration of disease for the age group 4 to 16 years averaged eight years. Within this period, 10 per cent died. In 46.9 per cent mitral insufficiency, in 38.4 per cent mitral insufficiency and stenosis, and in 14.8 per cent mitral and aortic lesions were present. Additional analyses were made for those 345 patients reaching the ages of 17 to 25 years for whom the average duration was an additional six years, and 108 records of rheumatic families including 182 rheumatic individuals were included for the analysis of the influence of environment (Wilson, May G.: Rheumatic Fever, New York, Commonwealth Fund, 1940, pp. 225-375).

3. Frost, W. H.: Papers of Wade Hampton Frost: A Contribution to Epidemiological Method, edited by K. F. Maxcy, New York, Commonwealth Fund, 1941, p. 586.

the ratio of the number of recurrences to the person-years of life experience at each age from 4 to 25 years was calculated. For 499 patients experiencing a major recurrence (arthritis, chorea and active carditis, alone or combined), age specific rates for different patterns and degrees of severity of the disease were made. In addition, comparison of the recurrence rates in twelve consecutive calendar years from 1924 to 1935 and the rate of recurrence for patients living under relatively favorable and unfavorable environmental conditions were determined.

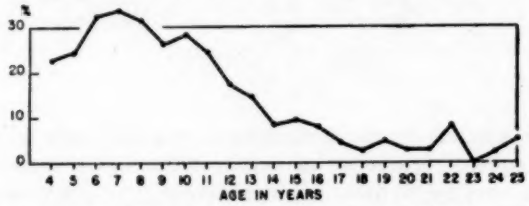

Chart 1.—Age specific recurrence rates for 499 rheumatic individuals comprising 5,677 person-years.

OBSERVATIONS

Among 499 patients between the ages of 4 and 16 years, representing 3,957.0 person years of life experience, 31 per cent did not have a recurrent major attack. There were 817 recurrent manifestations of arthritis, chorea and active carditis, alone or combined. Among 345 of these patients who reached the ages of 17 to 25 years, representing 1,720.0 person years of life experience, there were 64 major recurrent attacks. Eighty-seven per cent did not have a major recurrence.

AGE SPECIFIC RATES OF RECURRENCE DURING 5,677 PERSON YEARS OF LIFE EXPERIENCE

In table 1 and chart 1 it may be noted that the age specific recurrence rates reflect the natural history of the disease. The rates are highest between the ages of 4 and 13 years, having a peak incidence at about the age of 7 years. After the age of 13 years there is a significant downward trend, which reaches its lowest sustained level after the age of 17 years. The average recurrence rate from 4 to 13 years is 25.0 per cent, from 14 to 16 years the average rate drops to 8.7 per cent and from 17 to 25 years the average recurrence rate is 3.7 per cent. For a random sample between the ages of 4 and 16 years the average risk of recurrence is 20.6 per cent.

The variation in the risk of recurrence at different ages must be considered in selecting patients for study. It is obvious that the age constitution must be comparable in control and experimental groups. In a small series the presence of only a few patients of a different age in one of the groups might well account for any difference observed.

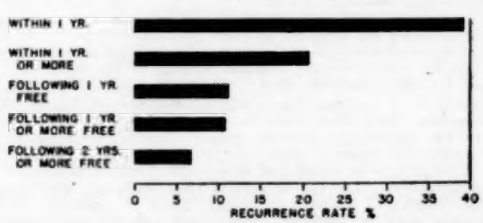
WITHIN 1 YR.
WITHIN 1 YR. OR MORE
FOLLOWING 1 YR. FREE
FOLLOWING 1 YR. OR MORE FREE
FOLLOWING 2 YRS. OR MORE FREE
0 5 10 15 20 25 30 35 40
RECURRENCE RATE %

Chart 2.—The risk of recurrence in relation to the last rheumatic attack.

The interval of time elapsing between recurrent attacks for patients between the ages of 4 and 16 years was also found to be an important influential factor in the risk of future recurrence. The risk of recurrence during the year immediately following a major episode is 38.7 per cent compared to 11.2 per cent in the year immediately following one year of freedom from recurrence. The average rate of recurrence within one year or more after a major rheumatic episode was twice as great as that following at least one year of freedom and three times as great as that following at least two years of freedom from symptoms, 20.6 per cent, 10.7 per cent and 6.6 per cent, respectively (chart 2 and table 2).

It is generally believed that the incidence of rheumatic fever varies in different years. Analysis of the rate of recurrence in twelve consecutive calendar years from 1924 to 1935 did not reveal any significant difference which could be attributed to epidemiologic factors.

TABLE 1.—*Age Specific Recurrence Rates for 499 Rheumatic Individuals Comprising 5,677 Person-Years*

Age	No. of Recurrences	Average Person-Years	Rate, per Cent
4	16	70.5	22.7
5	30	123.0	24.4
6	61	188.5	32.4
7	85	252.0	33.7
8	96	305.5	31.4
9	94	356.5	26.4
10	112	394.5	28.4
11	102	411.0	24.8
12	72	410.5	17.5
13	59	397.0	14.9
Total 4-13	727	2900.0	25.0
14	31	375.0	8.3
15	33	350.0	9.6
16	26	323.0	8.0
Total 14-16	90	1048.0	8.6
Total 4-16	817	3957.0	20.6
17	13	296.5	4.4
18	7	275.0	2.5
19	12	250.5	4.9
20	6	220.0	2.7
21	6	196.5	3.0
22	14	168.0	8.3
23	..	137.0	...
24	3	120.0	2.5
25	3	56.5	5.3
Total 17-25	64	1720.0	3.7

There is a sharp drop in the rates from 1928 to 1931, which reflects the addition to the clinic of a large group of children in whom rheumatic heart disease had been discovered on routine school examination. The elevation in 1932 was due to the transfer to the clinic of patients discharged from the wards following an acute attack of rheumatic fever. It is obvious that in a growing clinic population the different sources from which patients are drawn will influence the average rate of recurrence in the clinic population in any specific year. To prevent erroneous conclusions, it is apparent that data must be inspected for inadvertent bias (chart 3).

It might be expected that the risk of recurrence would vary with the number of previous attacks and the severity of the disease. The rate for the first recurrence after onset was 20.6 per cent. The rate for the second recurrence for those patients who had experienced one recurrence was 18.6 per cent. For those patients who experienced two recurrences the rate for

the third recurrence was 22.1 per cent. It is apparent that the risk for future attacks is not affected by the number of previous recurrences. It was also found that for patients who experienced only arthritis or chorea, alone or combined, the rates were not significantly lower than those observed for children who in

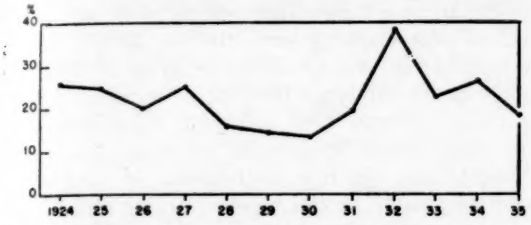

Chart 3.—The rate of recurrence in twelve calendar years (4 to 16).

addition had active carditis, 18.9 per cent and 24.6 per cent, respectively (chart 4).

Unfavorable living conditions are considered to increase the risk of recurrence. It was found that among 59 children living under relatively favorable environmental conditions the rate of recurrence, 22.3 per cent, was not significantly lower than that observed

TABLE 2.—*Risk of Recurrence in Relation to Last Rheumatic Attack*

	Within 1 Year or More			Following 1+ Years Free			Following 2+ Years Free		
Ages	No. of Recurrences	Average Person-Years	Rate per Cent	No. of Recurrences	Average Person-Years	Rate per Cent	No. of Recurrences	Average Person-Years	Rate per Cent
4-13	727	2909.0	25.0	287	2456.5	11.8	144	2144.5	6.7
14-16	90	1048.0	8.6	65	835.5	7.8	48	759.0	6.3
4-16	817	3957.0	20.6	352	3292.0	10.7	192	2903.5	6.6
	Within 1 Year			Following 1 Year Free					
4-13	441	1105.5	39.9	142	1274.5	11.1			
14-16	24	97.0	24.7	18	160.0	11.3			
4-16	465	1202.5	38.7	169	1434.5	11.2			

for 123 patients living in a more unfavorable environment, 26.0 per cent (chart 5).

The recurrence rates which have been presented may be used to determine the number of recurrences which should be expected in a random sample of rheumatic patients. It is to be emphasized that the two factors which were found to influence the risk of recurrence at any specific time are the age constitution of the group and the interval of time elapsing since the last attack.

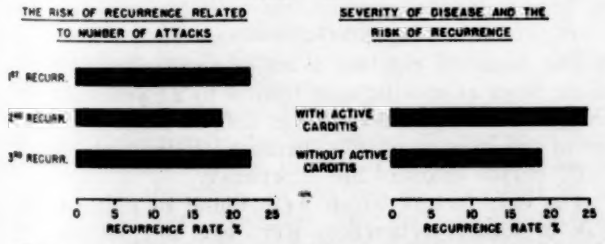
THE RISK OF RECURRENCE RELATED TO NUMBER OF ATTACKS
1ST RECURR.
2ND RECURR.
3RD RECURR.
0 5 10 15 20 25
RECURRENCE RATE %
SEVERITY OF DISEASE AND THE RISK OF RECURRENCE
WITH ACTIVE CARDITIS
WITHOUT ACTIVE CARDITIS
0 5 10 15 20 25
RECURRENCE RATE %

Chart 4.—At left, the risk of recurrence related to the number of attacks. At right, severity of disease and the risk of recurrence.

RECURRENCE RATES IN THE EVALUATION OF PUBLISHED STUDIES

In the majority of recent studies of the relative frequency of rheumatic fever in special groups, attempts have been made to control the observations. However, rarely have alternate experimental and control patients been selected. It is a common practice to introduce a selective bias by including patients in the control series who are uncooperative, refuse treatment or are dropped from the experimental group for various reasons. In some studies, patients are shifted back and forth from experimental group to control group. Frequently patients are matched for severity of disease or the number of previous attacks. The interval of time elapsing between attacks has not been considered. In many studies the experimental and control groups are not comparable because of differences in age constitution and number of patients. In the majority of the published reports the groups are too small, and conclusions have been based on summated observations.

Although selective factors and inadvertent bias were probably present in the published studies, an attempt was made to compare the number of recurrences expected and observed in the experimental and control groups of six published studies. It was not possible to apply our rates specifically for each age or for varying time intervals in every instance. As far as the data presented could be interpreted, appropriate average rates were applied.[4] It would be expected that the number of recurrences observed in the control groups would be in close agreement with the number expected, while in the treated groups the number expected would be significantly greater than the number observed. It was found that in the five experimental groups receiving chemotherapy the observed number of recurrences was not significantly lower than expected, with one exception. In four studies the observed incidence in the control groups was significantly higher than expected, indicating selective or inadvertent bias. The results of this analysis indicate that conclusions as to the efficacy of chemotherapy cannot be drawn from any of these individual studies nor can the results of several studies be summated.

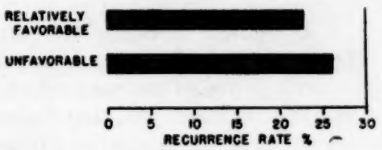

Chart 5.—Relation of environment to the rate of recurrence.

The reported frequency of rheumatic recurrences following hemolytic streptococcus infection is the basis for the prophylactic administration of sulfonamide drugs to rheumatic individuals. The incidence of rheumatic recurrences following hemolytic streptococcus infections ranges from 0 to 82 per cent in the various published studies.[5] In Kuttner's[6] large series of rheumatic patients who were under careful observation in a closed colony, only 28 per cent of the children who experienced hemolytic streptococcus respiratory infection had a subsequent rheumatic recurrence.

It is probable that in a clinic population the majority of the children experience hemolytic streptococcus infec-

4. Feldt, R. H.: Sulfanilamide as a Prophylactic Measure in Recurrent Rheumatic Infection: A Controlled Study Involving 131 "Patient Seasons," Am. J. M. Sc. **207**: 483, 1944. Hansen, A. E.; Platou, R. V., and Dwan, P. F.: Prolonged Use of Sulfonamide Compound in Prevention of Rheumatic Recrudescences: Evaluation Based on Four Year Study on Sixty-Four Children, Am. J. Dis. Child. **64**: 963 (Dec.) 1942. Kuttner, A. G., and Reyersbach, G.: Prevention of Streptococcal Upper Respiratory Infections and Rheumatic Recurrences in Rheumatic Children by Prophylactic Use of Sulfanilamide, J. Clin. Investigation **22**: 77, 1943. Thomas, C. B.; France, R., and Reichsman, F.: Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever, J. A. M. A. **116**: 551 (Feb. 15) 1941. Dodge, K. G.; Baldwin, J. S., and Weber, M. W.: The Prophylactic Use of Sulfanilamide in Children with Inactive Rheumatic Fever, J. Pediat. **24**: 483, 1944. Kuttner.[6]

5. Paul, J. R.: The Epidemiology of Rheumatic Fever, ed. 2, New York, Metropolitan Life Insurance Company, 1943, p. 35.

6. Kuttner, A. G.: Prevention of Rheumatic Recurrences: A Discussion of Various Measures Now Being Used, New York State J. Med. **43**: 1941, 1943.

tion during the season of maximum prevalence of rheumatic fever. If it is assumed that rheumatic recurrences are always preceded by a hemolytic streptococcus infection our recurrence rates may be considered to reflect this hypothesis. When these recurrence rates are applied to a group of rheumatic patients all of whom

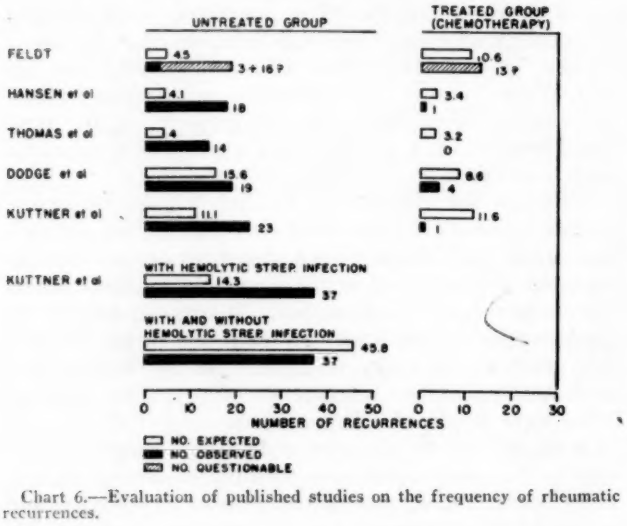

Chart 6.—Evaluation of published studies on the frequency of rheumatic recurrences.

had hemolytic streptococcus infections, there should be close agreement between the number of recurrences expected and observed. However, it was found in Kuttner's series of patients, all of whom had hemolytic streptococcus infections, that the number of recurrences observed was significantly greater than the number expected. It is significant that when the rates were applied to Kuttner's total series, in which two thirds

TABLE 3.—*Recurrence Rates in the Evaluation of Published Studies*

	Control				Treated			
			No. of Recurrences				No. of Recurrences	
	No. of Cases	Rate Applied	Expected	Observed	No. of Cases	Rate Applied	Expected	Observed
Feldt	42	10.7	4.5	3+16?	99	10.7	10.6	13?
Hansen, et al.	38	10.7	4.1	18	32	10.7	3.4	1
Thomas, et al.:								
7-13 years	3	25.0	0.7	..	2	25.0	0.5	..
14-19 years	39	6.3	2.4	7	29	6.3	1.8	..
20-29 years	12	3.7	0.4	2	15	3.7	0.6	..
30-37 years	13	3.7	0.5	5	9	3.7	0.3	..
Total	67	....	4.0	14	55	....	3.2	(1)
Dodge, et al.:								
Under 14 years	93.9	11.8	11.1	..	56.3	11.8	6.6	..
14-20 years	7.1	6.3	4.5	..	31.7	6.3	2.0	..
Total	101	....	15.6	19	88	....	8.6	4
Kuttner, et al.	104	10.7	11.1	23	108	10.7	11.6	1
Kuttner, et al.:								
With and without hemolytic streptococcus infections	428	10.7	45.8	37				
With hemolytic streptococcus infections	134	10.7	14.3	38				

of the group did not have hemolytic streptococcus infections, there was close agreement between the number of recurrences expected and observed. Conclusions as to the role of hemolytic streptococcus infections in precipitating rheumatic recurrences cannot be drawn from these data.

COMMENT

The expected rate for a major manifest recurrence of rheumatic fever as defined in these studies should be useful in evaluating observations on comparable groups of rheumatic patients.

Of particular importance is the observation that the rate of recurrence varies significantly with age and the interval of time elapsing since the last attack.

The number of attacks or the severity of the disease did not seem to influence the risk of recurrence.

To avoid selective bias, alternate experimental and control cases should be included for study. To prevent inadvertent bias, the age distribution of experimental and control groups should be comparable and the periods between attacks for the two groups uniform. Such bias in a small series might be responsible for any difference observed.

SUMMARY

1. The average over all risk for a major recurrence of rheumatic fever is 25.0 per cent for patients between the ages of 4 and 13 years, 8.6 per cent for patients between the ages of 14 and 16 years and 3.7 per cent for patients between the ages of 17 and 25 years. The average over all risk for children from 4 to 16 years of age is 20.6 per cent for a major recurrent attack.

2. The over all risk for a major recurrence of rheumatic fever is two to three times greater in any year following an attack than the risk following one or two or more years of freedom from activity, i. e. 20.6 per cent, 10.7 per cent and 6.6 per cent respectively.

3. The risk for the year immediately following an attack is 38.7 per cent in comparison to 11.2 per cent in the year immediately following one year of freedom from a recurrence.

4. The recurrence rate is not significantly different for patients experiencing one, two or three recurrent attacks, i. e. 22.3 per cent, 18.6 per cent and 22.1 per cent respectively.

5. The recurrence rate is not significantly different in patients experiencing arthritis and chorea, with or without active carditis. The severity of the disease did not appear to influence the risk of recurrence.

6. The rate of recurrence in twelve consecutive calendar years, from 1924 to 1935, was not significantly different when sampling factors were not operative.

7. The risk of recurrence is not significantly different among children living under relatively favorable and unfavorable environmental conditions.

CONCLUSIONS

The expected risk for a major recurrence of rheumatic fever at specific ages from 4 to 25 years and for various patterns of disease was defined from the analysis of the records of 499 rheumatic individuals during 5,677 person-years of life experience.

The only factors which were found to influence the risk of future recurrences were age and the interval of time elapsing since the last attack.

Most published studies on the relative frequency of rheumatic fever in experimental and control groups do not appear to meet the basic requirements for adequate biostatistical analysis. Final judgment as to the validity of etiologic concepts and consequent preventive therapy, which are based on these studies, must be deferred.

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THE DIAGNOSIS OF RHEUMATIC FEVER

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Numerous factors slowly accruing over the years have resulted in focusing our attention on the problem of rheumatic fever. This would seem logical in view of the fact that it remains one of the important soluble medical problems of our day. Increase in fundamental knowledge of the disease probably accounts for the major increase in interest, along with acceptance by an increasing number of physicians of the public health or community aspects of the disease. Recently small public programs of care have been developed in some states by the Children's Bureau of the U. S. Department of Labor. The legislative authority for such programs has been made possible by federal grants in aid to the states under title V of the Social Security Act. These carefully worked out care programs, along with extensive professional and lay education by many agencies, have played a pioneer role in the stimulation of general interest.

A more immediate stimulus has been the appearance of rheumatic fever among the armed forces in such volume as to constitute a serious medical problem. Epidemiologic data now beginning to appear in the literature indicate that rheumatic fever in the services would seem to be closely associated with epidemics of beta-hemolytic streptococcus infections. Thus, data in the literature on the recurrences of rheumatic fever, especially epidemics of recurrent rheumatic fever in known rheumatic fever and heart disease populations, are found to be pertinent and duplicated in populations of unknown rheumatic fever susceptibility, even in adult age groups. These data are based on reasonably sound observations, since clinical histories or observed illnesses, bacteriologic findings and the results of immunologic tests indicate a close association between rheumatic fever and preceding respiratory infection with beta-hemolytic streptococci, and with cognizance of the many unknown factors and varying elements of susceptibility on the part of the individual. This information offers a rational basis for the development of programs of prevention and care.

Programs of prevention and care (at least at study levels) are hence not only desirable but inevitable and will be insisted on by an informed public. It is therefore fitting that a National Rheumatic Fever Council is in the process of formation, the joint purpose of which is to advocate the extension of public programs of prevention and care, with essential private agency or individual stimulation of study programs and the conducting of studies designed to increase our basic scientific knowledge of the disease.

Despite our increase in knowledge of rheumatic fever, no specific diagnostic test has been forthcoming. This is a distinct deterrent to the advancement of the problem. From the study of the medical literature it is obvious that each observer has his own diagnostic criteria and that these may differ widely. For several reasons the importance of rather strict diagnostic criteria would seem essential at this time, and these may be enumerated as follows:

1. Otherwise the incidence of rheumatic fever may be interpreted as varying greatly whether the data are collected by surveys, the development of a rheumatic fever register, making the disease reportable, or the study of hospital records.

2. The interpretation of study programs of prevention and care is obviously dependent on such diagnostic criteria.

3. The professional and lay educational programs to date have overemphasized the serious implications of such a diagnosis, so that there is danger in producing often unnecessary and at times violent emotional and psychologic suffering among patients and parents if too liberal criteria are accepted. Granted, incidence figures may be altered inadvisedly. Nevertheless, until diagnostic measures become more specific, prognostic implications altered and reeducation conducted on this basis, there seems little doubt but that we may produce a not inconsiderable number of psychologic cripples. This feature is of especial pertinence to the armed forces.

Hence it is not surprising that the Subcommittee on Cardiovascular Diseases of the National Research Council, interested in the varied aspects of heart disease in relation to the war, has requested a reiteration of the diagnostic criteria of rheumatic fever.

With the understanding that diagnostic criteria must be subject to change as knowledge increases and that for the present it is inadvisable to accept the diagnosis without reasonable assurance of certainty, the various features may be discussed briefly under two headings: the clinical syndrome and the development of rheumatic heart disease. Under these headings one may discuss any feature relative to rheumatic fever, past or present. Some additional features will be mentioned under differential diagnosis and comment.

THE CLINICAL SYNDROME

Major Manifestations.—These manifestations offer the least likelihood of an improper diagnosis. Disagreement would seem to exist largely in the relative importance of the individual manifestations. Few if any clinicians would disagree as to the diagnosis in an acutely ill person presenting a combination of these major manifestations. In only three clinical syndromes is there often any confusion with such a combination of findings. Two of these are relatively rare, while the third is common. They are Still's disease (in children), disseminated lupus erythematosus and the acute form of rheumatoid arthritis. Occasionally long observation is necessary to differentiate these from rheumatic fever, and one must constantly bear them in mind when seeing an acutely ill patient.

1. Carditis. Since active carditis is found in all fatal rheumatic fever cases[1] it may be listed as the first major manifestation. Numerous evidences may be found of definite structural or functional cardiac change during acute rheumatic fever. Knowledge of the heart findings prior to the onset is often of prime importance. Incontrovertible evidence of active carditis may be accepted if the patient develops definite cardiac enlargement, significant cardiac murmurs, pericarditis (friction rub) or congestive failure. This would seem to hold at any age if other major manifestations exist. They are at times overlooked in the older patient. In the young patient these findings are usually indicative of rheumatic fever despite the absence of polyarthritis, and, indeed, in children such a clinical picture is not unusual. Doubt will certainly be raised concerning what comprises a significant murmur. It is beyond the scope of this

From the House of the Good Samaritan.
Read in a symposium on "Rheumatic Fever" before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

1. Bland, E. F., and Jones, T. D.: Fatal Rheumatic Fever, Arch. Int. Med. **61**: 161 (Feb.) 1938.

report to present the subject in detail. However, a loud, long, apical systolic murmur, wjdely heard and not varying with position, may be considered significant, as well as any type of diastolic murmur. It is entirely advisable to adhere to the classification and interpretation of heart findings as delineated in the "Nomenclature and Criteria for Diagnosis of Diseases of the Heart" (New York Heart Association, 1940).

Electrocardiographic changes may be demonstrated in many patients if repeated tracings are made. Prolongation of auriculoventricular conduction time (varying limits depending on the age of the patient) is the most frequent finding, but numerous other changes may be encountered (such as inversion of T waves, transient changes in electrical axis during failure, and so on). Cohn and Swift [2] state that as high as 95 per cent of these patients may show changes. Such changes are noted less frequently in children. While prolongation of the PR interval may be supracardiac in origin (Keith [3]), the presence of other symptoms make it highly suggestive of carditis, and it is often a diagnostic aid. Various arrhythmias (such as auricular fibrillation) may likewise be found during the acute illness. Sinus tachycardia is usually proportionate to other evidences of illness (carditis, fever and the like), and as a single manifestation it is rarely helpful. Struthers and Bacal [4] rightly point to the value of the sleeping pulse rate over that of the waking rate.

2. Arthralgia. Migrating polyarthritis is generally considered the classic feature of rheumatic fever. While it is common, especially in the young adult patient, no one symptom offers greater diagnostic difficulty, whether the joint changes are objective or mere subjective complaints. One must remain skeptical where this is the only real clinical finding aside from fever. The diseases are legion in which varying degrees of arthralgia are encountered. It is therefore advisable to search frequently for some evidence of carditis and other major and (as is common) minor rheumatic fever manifestations before accepting arthralgia as being proof of the existence of rheumatic fever. In my experience transient mild polyarthritis, without other diagnostic features suggestive of rheumatic fever or some other medical condition, rarely proves to be a problem of serious import. One must accept, I feel, one exception to this. Knowledge of the epidemiologic disease pattern of the community in which the disease develops may present strong presumptive evidence of rheumatic fever. For instance, if the patient has been exposed to a known beta-hemolytic streptococcus or scarlet fever epidemic, any joint symptoms become more significant. If the patient has had tonsillitis, pharyngitis or even a cold in the past two or three weeks, and serologic tests (such as antistreptolysin determination) indicate a recent hemolytic streptococcus infection, the burden of proof rests with the physician who would not interpret such a syndrome as rheumatic fever, since this represents the usual epidemiologic pattern of the disease. However, in the absence of such findings and other rheumatic fever manifestations, arthritic symptoms should not be considered certain proof of the existence of the disease. Some of the medical diseases to be considered in such circumstances will be given later.

3. Chorea. While chorea is a symptom complex, it is closely related to rheumatic fever. In our experience [5] about one half of all rheumatic fever patients (young patients) have chorea at some time. Conversely, approximately three fourths of our young chorea patients in time develop other major manifestations of rheumatic fever. This would seem closely to associate the two, and it is a rather satisfying relationship from a diagnostic point of view. Since chorea is rarely seen after adolescence, it is not usually helpful with the diagnosis in adults. However, an occasional adult with questionable rheumatic fever findings give a history of childhood chorea. The presence of definite chorea, associated with questionable signs and symptoms, helps establish a definite diagnosis of rheumatic fever.

4. Subcutaneous Nodules. While such nodules are characteristic, they rarely occur in the early stage of the acute illness, and in a large percentage of instances abundant evidence of carditis exists. Hence, only in rare patients are they helpful from a diagnostic point of view, but more often in the determination of the presence of active rheumatic fever in a person with known previous rheumatic fever or rheumatic heart disease.

5. Recurrences of Rheumatic Fever. Perhaps no feature of rheumatic fever is more striking or more important than the tendency of the disease to recur. Perhaps also no more serious aspect as to prognosis exists. A history of previous definite rheumatic fever or rheumatic heart disease is strong evidence of the existence of the active rheumatic fever in the presence of even mild signs and symptoms. In our experience [6] about 70 per cent of a series of young rheumatic fever patients had recurrences of the disease within ten years of the onset (the majority within five years), while Roth, Lingg and Whittemore [7] noted 68 per cent with recurrences in their series.

In summary, a combination of these major manifestations makes a diagnosis of rheumatic fever reasonably certain. One must realize that even with this criterion a statistically small number of cases will prove to have been incorrectly diagnosed, after long clinical observation.

Minor Manifestations.—Since the histologic changes are generalized, it is not surprising that the signs and symptoms are varied. Almost any complaint may be a part of the disease pattern; however, a limited number occur often enough and of such apparent significance as to warrant diagnostic consideration. These may be mentioned with varying degrees of emphasis:

1. Fever. A definite elevation of the body temperature is one of the most common and most variable findings in rheumatic fever. Fever alone, even in the presence of laboratory abnormalities, is insufficient to make a diagnosis of initial rheumatic fever. At the present time fever alone (or often in the presence of an extracardiac or so-called functional murmur) is a common erroneous basis for a diagnosis of rheumatic fever. While fever is helpful, it may be misleading, and other features are usually more important.

2. Abdominal Pain. A frequent occurrence is abdominal pain, the exact cause of which is yet undetermined. Many explanations have been offered. Its occurrence is frequent during evident active rheumatic fever. Of particular interest is the frequency with which it is the initial symptom. This is usually clinically indistinguish-

2. Cohn, A. E., and Swift, H. F.: Electrocardiographic Evidence of Myocardial Involvement in Rheumatic Fever, J. Exper. Med. **39**: 1 (Jan.) 1924.

3. Keith, J. D.: Overstimulation of the Vagus Nerve in Rheumatic Fever, Quart. J. Med. **7**: 29 (Jan.) 1938.

4. Struthers, R. R., and Bacal, H. L.: Determination of the Activity of Rheumatic Infection in Childhood, Canad. M. A. J. **29**: 470 (Nov.) 1933.

5. Jones, T. D., and Bland, E. F.: Clinical Significance of Chorea as a Manifestation of Rheumatic Fever, J. A. M. A. **105**: 571 (Aug. 24) 1935.

6. Bland, E. F., and Jones, T. D.: To be published.

7. Roth, I. R.; Lingg, C., and Whittemore, A.: Heart Disease in Children, Am. Heart J. **13**: 36 (Jan.) 1937.

able from acute appendicitis. I know of no accurate differential feature at this time. It is not unusual for other rheumatic symptoms to occur shortly after the removal of a normal appendix. This may pose a difficult diagnostic problem in known rheumatic individuals. It may be well to state that, since actual acute appendicitis may occur in rheumatic fever patients, decisions as to the need for operation are not easy.

3. Precordial Pain. While this is a common symptom, evidence of carditis is usually found when it is significant. At times precordial pain may suggest coronary involvement. One must remember, however, that mild or transient precordial pain is one of the commonest symptoms of neurocirculatory asthenia, even in the presence of definite heart disease.

4. Rashes. While many rashes have been described in rheumatic fever, it has been my experience that erythema marginatum is by far the most significant cutaneous manifestation. The evidence at hand rather suggests that it might be more properly classified as a major manifestation of rheumatic fever. Further study is needed on this score. Various purpuric manifestations do occur, but they are apparently less frequent than in the past.

5. Epistaxis. Nontraumatic nosebleeds are common in rheumatic fever. They appear to be less severe and less frequent than a decade ago. Their relationship to rheumatic fever is on a clinical basis as yet. In association with other findings they may be useful in the diagnosis.

6. Pulmonary Findings. During acute rheumatic fever various pulmonary changes are not unusual (even consolidation). The clinical and histologic patterns vary considerably. Without other evidence of rheumatic fever, pulmonary changes are rarely diagnostic. In view of their variability, it is advisable to list them as being of minor diagnostic significance.

7. Laboratory Findings. Since at the present time all laboratory abnormalities found in rheumatic fever are nonspecific in character, they are best listed as being of minor significance. The probable more pertinent implication of electrocardiographic abnormalities have been previously mentioned. The development of a microcytic anemia (severe in only a small percentage of patients), an elevated white blood count and an increase in the sedimentation rate of red blood cells are the most common abnormalities. The latter is perhaps the most useful. These tests are of more pertinence in evaluating the presence of active rheumatic fever (in a known rheumatic individual) than as a diagnostic aid. Occasionally rheumatic fever may be active without these laboratory abnormalities. Of especial interest is the frequent normal sedimentation rate in the presence of heart failure.

Numerous other signs and symptoms are encountered. They occur frequently in other diseases or conditions as well as in rheumatic fever. In my opinion they should not be considered as diagnostic aids in the absence of other abnormalities. The more common of these findings are fatigue, pallor, sweating, loss of weight, headache, vomiting (even cyclic), hematuria (more often microscopic than gross), bursitis and pleuritis (friction rub).

In summary, it may be stated that even a combination of these minor manifestations may not be sufficient to make a certain diagnosis of rheumatic fever, although they may be suggestive. It is further suggested that any single major manifestation with at least two of the minor manifestations would seem to place the diagnosis on reasonably safe grounds. The most common basis for a mistaken diagnosis with acceptance of this criterion would be the occurrence of some degree of arthralgia in the presence of fever and some laboratory abnormality. Here the history of a previous respiratory infection, exposure to a hemolytic streptococcus epidemic and/or the development of hemolytic streptococcus immune bodies would be a helpful and probably conclusive positive aid.

THE DEVELOPMENT OF RHEUMATIC HEART DISEASE

The presence of heart disease of the rheumatic type does not in itself indicate active but previous rheumatic fever. The indications of carditis listed previously are necessary for this interpretation. Rheumatic heart disease (especially mitral stenosis) often develops insidiously. Until we have a diagnostic test for rheumatic fever, the presence of rheumatic heart disease will continue to play an important role in evaluating the disease. The chief ways in which this is helpful may be listed as follows:

1. Minor manifestations of rheumatic fever in the absence of other causation are presumptive evidence of rheumatic fever (even initial) if the patient has rheumatic heart disease.

2. Knowledge of the period in which rheumatic heart disease develops (by previous known normal examination) would clearly indicate a diagnosis of rheumatic fever (mild and even subclinical) during that time. This is helpful in some epidemiologic studies and will doubtless aid in the more certain evaluation of diagnostic criteria.

In the absence of other causation the minor manifestations of rheumatic fever assume increased diagnostic importance in the presence of definite rheumatic heart disease.

DIFFERENTIAL DIAGNOSIS

Time and space do not permit extensive discussion of the differential diagnosis from other individual diseases. Both major and minor manifestations of rheumatic fever occur frequently in other diseases. One must constantly search for clinical and laboratory indications of other diagnoses. The diseases presenting confusion vary considerably. Experiences would differ between pediatricians and those caring for adults. The varied incidence of disease geographically alters the frequency with which some diseases may be confused with rheumatic fever. In a recent comparison of hospital admission and discharge diagnoses Hansen [8] pointed out that in a distinct majority there was a close agreement. In his group of children abdominal pain simulating appendicitis offered the most common difficulty. Other incorrect admission diagnoses were (in order of frequency) poliomyelitis, osteomyelitis, varied dermatoses and nephritis. It has been previously pointed out that Still's disease, disseminated lupus erythematosus and rheumatoid arthritis must constantly be borne in mind, the last named being the most frequent difficult differential condition in adult patients. It may be pointed out that rheumatic fever and rheumatoid arthritis coexist in a small number of patients. It is surprising that two such common diseases occur so rarely in the same patient. The possible relationship between these two diseases needs further clarification. Months or even years may be required for a definite differential diagnosis. Malingering may present a problem in diagnosis.

Other confusing diseases may be mentioned: tuberculosis, undulant fever, meningococcic septicemia, forms

8. Hansen, A. E.: Diagnosis of Rheumatic Fever, J. A. M. A. **121**: 987 (March 27) 1943.

of arthritis other than rheumatoid (especially gonococcic arthritis), gout, and even coccidioidomycosis (in limited areas). No attempt has been made to make this list exhaustive.

COMMENT

As already noted, it would seem logical to make a positive diagnosis on rather strict criteria. Until the etiology of rheumatic fever is known or there is a specific diagnostic test, some confusion is inevitable. We may develop more intelligent criteria with careful clinical observations. For instance, the recent syndrome described by Kaiser [9] may prove to be rheumatic fever, though he has rightly warned against such definite acceptance as yet. The development of rheumatic heart disease by any appreciable percentage of members of the armed services having mild, and even transient, suggestive rheumatic fever symptoms may lead to the more liberal interpretation of possible rheumatic fever symptoms.

The problem of a hereditary susceptibility is also of importance. The high familial incidence of rheumatic fever and susceptibility on the basis of history may and should heavily weigh the interpretation of suggestive manifestations. One hesitates as yet to use this aid for general diagnostic purposes. Recently DeLiee, Dodge and McEwen,[10] using polyarthritis as the common clinical feature in comparing children and adult groups, found that residual rheumatic heart disease at the time of hospital discharge was much lower in adults than in children. The elimination of all save one major manifestation as the basis of selection of cases for analysis may lead to false conclusions. It is difficult to evaluate such a varied clinical syndrome as rheumatic fever on the basis of a single sign or symptom. While many observers feel that heart disease is less common in adults with rheumatic fever than in children, it has been my experience that rheumatic heart disease is common to the two groups and without great discrepancy as to incidence.

There has been a strong tendency to consider a satisfactory response to salicylate as a diagnostic aid. The recent revival of interest in salicylate therapy with massive dosages (Coburn [11]) renews this possibility. One may state that the clinical course of various diseases may be altered to some degree by salicylates. Until additional evidence is forthcoming the amelioration of signs and symptoms by salicylates in questionable cases would not seem advisable to consider as more than suggestive evidence of a diagnosis of rheumatic fever. The evaluation of the effectiveness of salicylate therapy may be rendered impossible unless strict criteria are used in the selection of patients for such study.

In my experience it has been impossible to differentiate any prerheumatic state.

SUMMARY

For the present, it would seem advisable to limit the diagnosis of rheumatic fever to patients with rather distinct clinical manifestations. It is suggested that the following constitute reasonably certain diagnostic criteria:

1. Any combination of the major manifestations (carditis, arthralgia, chorea, nodules and a verified history of previous rheumatic fever).

2. The combination of at least one of the major manifestations with two of the minor manifestations (fever, abdominal or precordial pain, erythema marginatum, epistaxis, pulmonary changes and laboratory abnormalities).

3. The presence of rheumatic heart disease increases the diagnostic significance of the minor manifestations, when no other cause for these manifestations exists.

Small though probably insignificant errors may be found with these criteria. Numerous clinical entities as enumerated may be confused with rheumatic fever. Clinical observations and, wherever possible, specific diagnostic tests should be applied in any diagnostic problem.

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9. Kaiser, A. D.: A Clinical Syndrome in Children Resembling Rheumatic Fever, New York State J. Med. **43**: 1937 (Oct. 15) 1943.

10. DeLiee, E. M.; Dodge, K. G., and McEwen, C.: The Prognostic Significance of Age at Onset in Initial Attacks of Rheumatic Fever, Am. Heart J. **26**: 681 (Nov.) 1943.

11. Coburn, A. F.: Salicylate Therapy in Rheumatic Fever, Bull. Johns Hopkins Hosp. **73**: 435 (Dec.) 1943.

THE ROLE OF THE CARDIAC CLINIC IN THE RHEUMATIC PROGRAM

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The need for the development of community rheumatic fever programs and the importance of the cardiac clinic in such programs has been supported by many clinical and epidemiologic facts. These include difficulties in the diagnosis of rheumatic disease, the chronic nature of rheumatic disease with its impact on family life, the low economic level in which the disease is most prevalent, the wide prevalence of the disease and the complexity of care necessary for the management of patients.

I should like to discuss these individual factors in more detail. The reasons for the difficulty of diagnosis of rheumatic fever have been adequately summarized in the paper by Dr. T. Duckett Jones.[1] I should like to reemphasize the unknown etiology of the disease, the lack of a specific diagnostic test and the fact that the diagnosis is frequently dependent on the physician's impression of a group of nonspecific symptoms and signs. I have selected these points since they emphasize the great possibility of error in falsely diagnosing the disease in normal persons and the failure to diagnose the disease in the rheumatic patient. Studies conducted by the Cardiac Bureau of the New York State Department of Health indicated clearly that there was a wide variation, i. e. from zero to 13 per cent in the diagnosis of rheumatic disease by the general practitioner in comparable groups of children.[2] It is a serious matter not to diagnose rheumatic disease when it exists, but it is to be emphasized that it is an even greater tragedy to apply the rheumatic label to a normal child. The symptoms and signs of rheumatic fever are for the most part nonspecific, and the disease is therefore easily confused with a host of other diseases including tuberculosis, anterior poliomyelitis, functional heart disease, influenza or the grip, undulant fever, acute appendicitis, sickle cell anemia and other febrile diseases and inflammatory joint diseases. Emphasizing the difficulty in diagnosis is the fact that initial examinations of suspected cardiac patients in excellent clinics by experts in rheumatic diseases result in one third of the individuals examined being classified as having pos-

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1. Jones, T. D.: The Diagnosis of Rheumatic Fever, this issue, page 481.

2. Rutstein, D. D., and Parker, M. E.: Unpublished observations.

sible or potential heart disease;[3] i. e. it is not possible in one third of the cases to determine on one examination whether or not rheumatic disease is present. Therefore it is no surprise that the general practitioner with his many other responsibilities cannot be expected to make a final diagnosis of rheumatic disease in many cases.

The chronic nature of rheumatic disease and the familial prevalence of the disease place a great burden on the family. Patients are prone to have recurrent attacks of rheumatic fever and require special care between attacks. Finally the development of rheumatic heart disease imposes crippling and limitation of activity in a large percentage of cases. This indicates a need for vocational training in a sedentary occupation if the patient is to remain self supporting for a long time.

The fact that more than one person in the same family may become afflicted with the disease contributes to the low economic level in which the disease is most prevalent. The low economic level implies poor, crowded and damp housing, poor nutrition and the frequent occurrence of other diseases in the family. If the rheumatic patient is to be properly handled at home, it is obvious that financial support must be given to the family to improve the environment by obviating those factors which predispose to the disease.[4] In addition to the patient other members of the family will probably benefit from an improved environment, since they are highly susceptible to rheumatic fever. In certain cases foster home and convalescent home services are necessary, and such services must be supplied.

The magnitude of the problem is great. Where surveys have been conducted, from 0.3 to 4 per cent of the childhood population and from 0.6 to 1 per cent of the young adult population have been found to be afflicted with rheumatic heart disease. This is similar to the prevalence of tuberculosis. Another index of the importance of rheumatic fever is the total mortality from rheumatic heart disease, which, as determined by Hedley in Philadelphia,[5] amounts to approximately 25 to 30 per hundred thousand annually. Swift[6] has shown that the reported deaths from rheumatic fever and rheumatic heart disease in New York City in 1938 were 1,105 as compared with a combined total of 247 for whooping cough, cerebrospinal meningitis, measles, diphtheria, scarlet fever and infantile paralysis. In other words, in 1938 there were five times as many deaths from this one disease as from a combination of six common reportable diseases in New York City.

It is evident from the foregoing that the care of most rheumatic patients requires more than medical supervision by a physician. Indeed, it involves the cooperation of the medical and nursing services, the hospitals, convalescent homes, foster homes, public and private welfare agencies, the school systems, housing authorities and public health agencies. If complete care is to be provided, careful interrelated planning by all these agencies must be performed. In surveying this complicated problem, it is evident that the focus for such an organization is the cardiac clinic.

I should like to stress the fact that such community organization is not new. The London County Council, long before the present war, developed the London Rheumatic Scheme,[7] which provides a model for such organization. In the so-called Rheumatism Section of the London County Council's Rheumatism Scheme, two series of records are kept: first, a register of all proved cases of rheumatic disease and, second, a file by agency of all the facilities that are available in the community for the care of such patients. Such an arrangement interrelates the activities of the agencies and makes possible the referral of the patient to those agencies which are necessary for his proper care. In upper New York State a survey has revealed that when there is no community program there is a great deal of waste and reduplication of effort on the part of many agencies caring for rheumatic patients.[2] This could be obviated by the establishment of a cooperative community program.

In the organization of such a program the cardiac clinic should provide the following services: diagnostic, follow-up and case finding facilities, a rheumatic register and an educational program for physicians in the diagnosis and treatment of the disease and for nurses and medical social workers in the part they are expected to play in the management of the disease.

The clinic should serve as an aid to the physician by assisting him in the diagnosis and management of his patients. Clinics can be so established as to assure the physician-patient relationship, at the same time providing the patient with adequate care and the physician with constant guidance in the care of his patient. The physician-patient relationship obtains only in a small percentage of the cases, since most of the victims of this disease, particularly in urban areas, fall into the economic group which makes up the usual clinic population. The patients whose diagnoses are verified in the cardiac clinic would be listed in the cardiac register.

The registry system should not be confused with the usual system of reporting a disease. In the former case, that is the registry system, the diagnoses are verified prior to registration. In the case of a reporting system, cases are filed as reported without verification. The difficulties in diagnosis are so great as to make it practically impossible to evaluate information derived from unverified reported cases. There are also practical difficulties in the institution of a requirement for the reporting of a disease which has previously been unreportable. Chief among these is the understandable objection of the practicing physician to the constant increase in the load of clerical work which expanding public health programs demand of him. This objection might be overcome if it could be shown that the information obtained would be of value and that practical benefits in the form of facilities for the care of patients reported would accrue to the practicing physician. The great amount of effort which would be involved in the institution and maintenance of this system of reporting would, however, have to be justified by the type of information obtained. In the light of past experience it is doubtful at present whether the information obtained by the reporting of rheumatic fever and rheumatic heart disease would justify the effort.

In contrast the collection of verified cases under the registry method offers an approach which will provide accurate information. When that information is complemented by a compilation of all available community

3. Cardiac Classification Service, Department of Health, City of New York: Unpublished data.

4. Paul, J. R., and others: The Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects, ed. 2, New York, Metropolitan Life Insurance Company, 1943.

5. Hedley, O. F.: Mortality from Rheumatic Heart Disease in Philadelphia During 1936, Pub. Health Rep. **52**: 1907, 1937.

6. Swift, H. F.: Features Which Suggest Public Health Consideration of Rheumatic Fever, Bull. New York Acad. Med. **16**: 501, 1940.

7. Thornton, C. E.: London Scheme for the Treatment and Supervision of Juvenile Rheumatism, Acta rheumatol. **9**: 10, 1937. Annual Report of the Council for the Year 1937, London County Council, 1938, vol. 3, pt. 2. Bach, F.; Hill, N. G.; Preston, T. W., and Thornton, C. E.: Juvenile Rheumatism in London, Ann. Rheumat. Dis. **1**: 210, 1939. Schlesinger, B.: Public Health Aspects of Heart Disease in Childhood, Lancet **1**: 593 and 649, 1938.

resources for the care of the patient, practical results will accrue to the patient and to the private physician.

Studies such as those conducted at the Boston Lying-In Hospital [7a] indicate that almost half of a group of adults with rheumatic heart disease had no recollection of preexisting rheumatic fever and most of this group did not know that they had heart disease. The results of such studies demonstrate the great need for a case finding service. It is one of the functions of the cardiac clinic to provide a case finding service. Such a service should be begun by an examination of siblings of known cases in the light of the familial prevalence of rheumatic disease recently emphasized by the studies of May Wilson.[8]

The clinic should provide follow-up services since the disease is a chronic one and because approximately one third of the patients referred to the clinic for diagnosis will require repeated examinations before diagnosis can be made. The follow-up facilities would be used for the establishment of the diagnosis in the questionable cases, for the continued care of patients under treatment by the clinic and for continued consultation with the patients of private physicians.

The cardiac clinic should serve as an educational center for instruction in rheumatic fever and rheumatic heart disease for physicians, nurses and medical social workers. The professional education of physicians would be along two lines. A small group of properly qualified physicians should be trained intensively so that they may be able to assist in the clinic and extend clinic service elsewhere. The general practitioner should be trained primarily in the manifold symptomatology of the disease so that he may lower his threshold of suspicion to the presence of the disease. Since the general practitioner must act as the agency for the initial screening of the cases, he should suspect rheumatic fever in any patient with suggestive symptomatology and refer that patient to the clinic for diagnosis. Training in the nursing aspects of rheumatic fever should be provided to graduate nurses so that they may be able to handle their responsibilities in the management of the disease in an intelligent fashion. Medical social workers should also be trained to know their responsibilities when they are called on to direct the medical social aspects of care of the rheumatic patient.

Public educational programs at first should be limited to that necessary to obtain community support. After the program is well established, education of the public in the symptoms and signs of the disease should be carried on in order that patients may be brought under medical care at the earliest possible moment.

Adequate standards for cardiac clinics have been established. A cardiac clinic should meet standards similar to those established by the New York Heart Association and modified for national use by the American Heart Association.[9] An inspection of such standards reveals that the facilities of a cardiac clinic are much more than an examining physician and an electrocardiograph. The standards of the American Heart Association provide among others that the clinic have adequate space, be affiliated with the ward service of a hospital and be directed by a physician who has qualifications equivalent to those required by the American Board of Internal Medicine for certification as a specialist in internal medicine and the subspecialty of cardiovascular disease, or by those required by the American Board of Pediatrics. In children's clinics it is probably desirable to have the general pediatric care of the child supervised by the pediatrician and the cardiac aspects supervised by a qualified cardiologist. The standards also require that provision should be made for consultation service in required specialties, that adequate records be kept and that adjunct services be available, which for the rheumatic patient would provide for fluoroscopy, electrocardiography and laboratory procedures such as leukocyte counts and sedimentation rates. Adequate nursing service should be available. A medical social worker should be attached to the clinic to work out individual problems concerned with utilization of community resources for the benefit of the patient. Indeed, the effectiveness with which the medical social workers perform their jobs will in the final analysis determine the operating efficiency of the clinic.

In summary, then, a community rheumatic fever program is essential if complete care is to be given to patients suffering from rheumatic disease, and the cardiac clinic with an affiliated registry should serve as the focus around which the community rheumatic fever program should be built.

7a. Hamilton, B. E., and Thomson, K. J.: The Heart in Pregnancy and the Childbearing Age, Boston, Little Brown & Co., 1941, pp. 228-229.

8. Wilson, M. G.; Schweitzer, M. D., and Lubschez, R.: The Familial Epidemiology of Rheumatic Fever: Genetic and Epidemiologic Studies, J. Pediat. **22**: 468-581, 1943.

9. Standard Requirements for a Cardiac Clinic, modified from those of the New York Heart Association by the American Heart Association, New York, 1941.

THE GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI

RELATIONSHIP TO THE INCIDENCE OF RHEUMATIC FEVER

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Geographic variations in the distribution of hemolytic streptococci and in the incidence of acute rheumatic fever have been generally recognized.[1] Much use has been made of these observations, both as an approach for studying the etiology of rheumatic fever and as a therapeutic answer for those individuals found to be susceptible to this disease. Coburn [2] has described the results of sending a group of rheumatic children to Florida. This study is well known, but its application has been limited in civilian life by the lack of a nationwide organization to promote its utilization on a large scale.

The concept of a probable relationship between streptococcic infections and rheumatic fever is now widely accepted. The intimate study of this relationship from a bacteriologic standpoint has been made possible by the classification of the hemolytic streptococcus by Lancefield [3] and Griffith [4] into a system of

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The data used in preparing this report were gathered at a number of Army Air Forces installations under the direction of the following personnel: Lieut. Wendell C. Allen, Sn. C., Major Warren N. Christopher, Sn. C., Captain Edmundo Felix, Sn. C., Captain Edward D. Freis, M. C., Captain Joseph S. Gots, Sn. C., Major Leslie R. Grams, M. C., Captain Charles G. Jennings, M. C., Captain Arthur C. Jordan, Sn. C., Major Samuel Malamed, M. C., and Captain Roland B. Mitchell, Sn. C.

1. Paul, J. R.: The Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects, ed. 2, New York, Metropolitan Life Insurance Company, 1943.

2. Coburn, A. F.: Factor of Infection in the Rheumatic State, ed. 1, Baltimore, Williams & Wilkins Company, 1931.

3. Lancefield, R. C.: Antigenic Complex of Streptococcus Hemolyticus: Demonstration of Type Specific Substance in Extracts of Streptococcus Hemolyticus, J. Exper. Med. **47**: 91-103 (Jan.) 1928. Serological Differentiation of Human and Other Groups of Hemolytic Streptococci, ibid. **57**: 571-595 (April) 1933.

4. Griffith, F.: Serological Classification of Streptococcus Pyogenes, J. Hyg. **34**: 542-584 (Dec.) 1934.

groups and types and the development of practical methods for their differentiation. The contribution which the Rockefeller Institute for Medical Research is making in serving as a source for the specific grouping and typing serums used in these methods cannot be overemphasized.

My purpose in this paper is to describe geographic variations in the distribution of the component types of group A hemolytic streptococci as observed in Army Air Forces installations and the relationship between these variations and the incidence of rheumatic fever. Reference is made to the use of this information in the management of acute rheumatic fever.

At eight Army Air Forces installations, laboratories for the grouping and typing of hemolytic streptococci are in operation. Credit for the accumulation of material reported in this paper belongs to the personnel responsible for the organization of these laboratories and the development of methods for handling the large amount of bacteriologic material involved in this study. These laboratories have been located so as to represent both areas of low incidence and areas of high incidence of rheumatic fever.

In general, an effort has been made to obtain information in four categories:

1. Hemolytic streptococcus post survey (carrier) rates.
2. Incidence of hemolytic streptococci in hospital admissions for upper respiratory disease.
3. The grouping and typing of hemolytic streptococci isolated from patients with scarlet fever.
4. The grouping and typing of hemolytic streptococci isolated from patients with rheumatic fever and from respiratory infections antecedent to rheumatic fever.

The results of these studies have been summarized in the accompanying tables.

GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI AS DETERMINED BY POST SURVEY

Table 1 indicates the variations in incidence of hemolytic streptococci observed in samples of troops from posts at which the eight laboratories are located. These represent the averages of a series of surveys done at intervals during the period from Jan. 1 to April 21, 1944. The number of cultures involved varies from 245 to 3,222 for the individual posts and total 8,992 for the group. This study indicates for the winter season involved and on a basis of the posts studied that the distribution of hemolytic streptococci throughout troop population is much greater in the Rocky Mountain area and adjacent parts of the country than at posts located in the southern parts of the country.

An analysis of table 1, while indicating great variations in percentage incidence of the hemolytic streptococcus and its component groups and types, shows in general a rather widespread distribution of those different components and no tendency for certain of the types to supplant completely all the others in certain areas. The latter state of affairs would of course be surprising in view of the constant to and fro movement of troops during the process of their training and is in contrast to the epidemic situations which at times arise in relatively isolated groups in civilian life due to a single type of hemolytic streptococcus. This situation is occasionally approached in small posts with relatively stable personnel but has not been observed in this experience in any of the large Air Forces installations engaged in the training of troops.

GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI IN HOSPITAL ADMISSIONS FOR UPPER RESPIRATORY DISEASE

In table 2 are summarized the results of bacteriologic studies done on patients hospitalized for upper respiratory disease. While it appears that types 19, 17, 30, 3, 1, 36 and 6 are associated with the majority of these infections, at all posts with significant incidence rates a multiplicity of other types are involved.

TABLE 1.—*Geographic Distribution of Hemolytic Streptococci in Army Air Forces Installations as Determined by Post Survey*

	Recorded as Percentage							
Posts	Buckley	Kearns	Amarillo	Lincoln	SAACC	Drew	Davis Monthan	Total
No. men surveyed	1,303	425	8,603	341	3,322	651	136	16,496
No. of surveys	9	13	8	3	7	2	2	....
Hemolytic streptococci	30.4	13.4	19.4	17.6	0.4	16.0	2.9	19.0
Group								
B	...	...	3.1	...	0.2	1.8	...	1.9
C	...	...	0.8	...	...	2.2	0.7	0.5
D	...	...	0.01	...	...	0.6	...	0.03
E	...	3.3	0.06	...	...	...	1.5	0.1
F	...	...	0.2	...	...	1.7	...	0.2
G	...	...	0.01	...	...	0.6	...	0.03
H	...	...	1.1	...	...	1.8	...	0.7
L	...	...	0.2	...	...	...	...	0.09
Group								
A	30.3	9.2	13.1	9.7	0.3	1.4	0.7	14.6
Type								
1	4.8	2.6	0.9	1.5	...	0.2	0.7	1.4
2	...	...	0.06	...	...	...	...	0.03
3	5.2	0.9	3.1	1.2	...	...	...	2.4
4	...	...	0.07	...	...	...	...	0.04
5	...	0.2	0.07	...	...	...	...	0.07
6	1.1	0.2	1.0	0.6	...	...	...	0.7
8	0.2	0.1	0.01	...	...	...	...	0.05
9	...	...	0.02	...	...	...	...	0.2
11	...	...	....	...	...	...	...	....
12	0.2	0.7	0.3	...	...	0.2	...	0.2
13	...	0.2	....	...	...	...	...	0.01
14	4.7	...	0.01	...	...	...	...	0.8
15	...	...	....	...	...	...	...	....
17	0.2	1.2	1.5	...	0.1	...	...	1.0
18	0.5	...	0.01	0.3	...	0.2	...	0.07
19	5.3	1.9	2.2	2.4	0.1	...	...	2.7
22	...	...	0.02	...	...	...	...	0.01
23	0.1	...	0.01	...	...	0.2	...	0.02
24	0.2	0.5	0.4	...	...	...	...	0.3
26	0.1	...	0.2	...	...	...	...	0.1
28	...	0.2	0.05	0.3	...	...	...	0.04
29	0.1	...	0.5	0.3	...	...	...	0.3
30	1.9	0.2	1.9	0.9	0.1	...	...	1.4
31	0.1	...	....	...	...	...	...	0.01
32	...	...	....	...	...	...	...	....
33	0.1	...	....	0.3	...	0.2	...	0.02
36	2.7	0.2	0.09	...	...	...	...	0.48
37	...	...	....	...	...	...	...	....
38	...	...	0.01	0.3	...	...	...	0.03
39	...	0.2	0.01	...	...	...	...	0.01
40	...	...	0.01	...	...	...	...	0.01
41	...	...	0.01	...	...	0.2	...	0.01
43	0.1	...	0.01	...	...	...	...	0.01
44	...	...	0.01	1.2	...	0.2	...	0.02
46	0.2	...	0.03	...	...	...	...	0.07

GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI IN HOSPITAL ADMISSIONS FOR SCARLET FEVER

Table 3 summarizes the results in 286 cases of scarlet fever. In 229 cases group A hemolytic streptococci were isolated, representing some twelve types. Here again types 1, 3, 17, 19 and 30 are the common types.

THE GEOGRAPHIC DISTRIBUTION OF HEMOLYTIC STREPTOCOCCI ISOLATED FROM PATIENTS WITH RHEUMATIC FEVER

Approximately 1,600 throat cultures have been done on some 400 patients with rheumatic fever at various stages of their disease. The types obtained at individual posts paralleled closely the types observed with respiratory disease and scarlet fever. For the following

reasons these studies are felt to have little etiologic importance and are not presented in tabulated form. In 36 patients pharyngeal cultures were obtained during an upper respiratory infection which preceded by two to four weeks the onset of acute rheumatic fever. An analysis of the cultures taken after the onset of the latter disease shows that in 28 instances cultures at that time revealed a different type of hemolytic streptococcus. In 4 instances no organisms were recovered (when hemolytic streptococci had been found at the initial examination). In only 6 instances was the same Lancefield type of hemolytic streptococcus isolated at both examinations. Thirty-one strains representing nine Lancefield types were found at the initial culture. If it is assumed that the strains found at the original culture were in large part the organisms responsible for the infection which precipitated the episode of acute rheumatic fever, subsequent cultures must therefore in the majority of instances represent asymptomatic and unrelated cross infections. This thesis is elaborated in table 4. Serial throat cultures taken at intervals approximating seven days in 74 rheumatic fever patients at Buckley Field, Colorado (a post with a high incidence of rheumatic fever), are arranged in columns to indicate whether the strains listed were isolated from the same individual at the preceding examination or whether they represent a change from this examination.

It happened that in only 1 instance was the same Lancefield type found at the second examination as was isolated at the first, while 37 new strains appeared. This ratio fell with succeeding cultures but further demonstrates the impossibility of obtaining information regarding the bacteriology of the precipitating infection from pharyngeal cultures done following the development of acute rheumatic fever under the conditions which exist at Army posts which have high incidence rates for streptococcic disease and rheumatic fever. A different situation may exist in small static and comparatively isolated groups in which a single type of hemolytic streptococcus may become epidemic.

A study from the Army Air Forces Regional Station Hospital at Davis Monthan Field at Tucson, Ariz., which is located in an area of low incidence of rheumatic fever and streptococcic disease and to which rheumatic fever patients are sent for convalescent care, is illustrated also in table 4 for comparison with that at Buckley Field. At this post the relative infrequency with which new strains of hemolytic streptococci were acquired is as impressive as is the tendency of the indi-

TABLE 2.—*Geographic Distribution of Hemolytic Streptococci in Patients Hospitalized for Upper Respiratory Infections in Army Air Forces Installations*

(Recorded in Percentage of Total Group Surveyed)

Posts	Buckley	Lowry	Kearns	Amarillo	Lincoln	SAACC	Drew	Davis Monthan	Total
No. men surveyed	2,215	737	1,050	2,889	307	401	181	334	8,404
No. of surveys.	6	9	13	...	11	2	2	17	...
Hemolytic streptococci....	59.0	45.0	35.9	70.7	48.6	6.7	7.2	56.6	54.5
Group									
B.....	...	...	...	0.6	...	...	...	0.3	0.2
C.....	...	...	...	3.1	...	...	0.6	2.4	1.2
D.....	...	...	...	4.3	...	...	...	0.6	1.5
E.....	...	1.9	0.6	5.7	...	...	...	2.1	2.3
F.....	...	0.4	...	0.9	...	...	1.1	0.3	0.4
G.....	...	...	...	0.5	...	...	...	0.3	0.2
H.....	...	...	...	4.5	...	...	0.6	...	1.5
L.....	...	...	...	0.7	...	...	...	...	0.2
Group A.....	58.2	42.9	24.5	49.8	37.0	6.3	2.8	49.4	43.9
Type									
1.....	7.0	3.3	2.4	4.9	1.2	...	...	3.9	4.4
2.....	0.1	...	...	0.2	...	...	...	0.6	0.1
3.....	7.2	2.6	2.0	11.5	1.5	...	...	1.5	6.5
4.....	0.1	...	...	0.07	...	...	...	...	0.6
5.....	0.2	0.3	...	0.1	...	...	...	0.3	0.1
6.....	2.5	0.9	0.6	4.7	0.8	...	...	0.9	2.5
8.....	0.2	...	...	...	...	...	...	0.6	0.07
9.....	0.1	...	...	...	...	...	...	...	0.02
11.....	0.1	...	...	...	...	...	...	0.3	0.05
12.....	0.4	...	0.4	0.3	...	...	...	1.5	0.3
13.....	0.1	...	...	0.1	...	...	...	...	0.06
14.....	5.9	2.6	0.7	0.1	...	...	...	0.3	1.9
15.....	...	...	0.1	...	...	...	...	...	0.01
17.....	0.4	0.8	4.8	6.5	...	3.9	...	6.9	3.5
18.....	0.2	0.1	...	0.06	...	...	...	0.3	0.08
19.....	16.9	9.9	3.3	8.8	3.4	...	0.6	18.3	9.2
22.....	...	...	0.1	...	0.2	...	...	...	0.02
23.....	0.1	...	...	...	...	...	...	...	0.01
24.....	0.5	...	...	0.1	0.2	...	...	0.6	0.3
26.....	0.3	0.5	...	0.9	0.5	0.1	...	7.8	0.9
28.....	0.2	...	0.1	0.1	...	...	0.6	1.2	0.1
29.....	0.1	...	0.1	0.5	...	...	...	...	0.2
30.....	3.9	2.2	6.2	6.6	1.2	2.0	0.6	9.6	4.8
31.....	...	...	...	...	0.2	...	...	...	0.01
32.....	0.1	0.1	0.1	...	...	...	0.6	...	0.05
33.....	0.2	...	...	0.07	...	...	...	...	0.07
36.....	4.2	1.9	1.8	0.03	0.7	...	...	1.2	1.6
37.....	0.1	0.1	...	...	0.2	...	...	...	0.04
38.....	0.1	0.3	...	...	...	...	...	...	0.04
39.....	0.1	...	...	...	0.2	...	...	...	0.04
40.....	...	...	...	...	...	...	...	...	...
41.....	0.1	...	0.1	0.2	...	...	...	...	0.1
43.....	0.2	...	...	0.2	...	...	0.6	0.3	0.1
44.....	0.1	0.1	0.2	0.07	...	...	...	...	0.1
46.....	0.4	...	...	1.2	...	...	...	...	0.5

TABLE 3.—*Geographic Distribution of Hemolytic Streptococci Isolated from Patients Hospitalized for Scarlet Fever*

(Recorded in Percentage of Total Group Surveyed)

Posts	Buckley	Lowry	Kearns	Amarillo	Lincoln	SAACC	Drew	Davis Monthan	Total
No. men surveyed	82	15	30	272	17	21	11	18	465
No. of surveys.	....	9	13	....	11	7	2	17	....
Hemolytic streptococci....	81.7	60.0	100.0	87.9	88.2	100.0	100.0	94.4	88.0
Group									
B.....	...	...	...	0.4	...	...	...	...	0.2
C.....	...	...	...	0.4	...	...	...	...	0.2
D.....	...	...	...	0.4	...	...	...	...	0.2
E.....	...	...	...	1.5	...	...	...	...	0.9
F.....	...	...	...	0.4	...	...	...	...	0.2
G.....	...	...	...	...	...	...	...	...	...
H.....	...	...	...	2.2	...	...	...	...	1.3
L.....	...	...	...	0.7	...	...	...	...	0.4
Group A.....	79.3	60.0	96.7	80.2	52.9	100.0	100.0	94.4	81.5
Type									
1.....	7.3	...	...	4.0	11.8	...	...	...	4.1
2.....	...	...	...	0.4	...	...	...	...	0.2
3.....	29.3	30.0	3.3	20.6	...	...	...	...	18.1
4.....	...	...	...	...	...	...	...	...	...
5.....	...	...	...	...	...	...	...	...	...
6.....	...	6.7	3.3	0.7	...	...	...	...	0.9
8.....	...	...	...	...	...	...	...	...	...
9.....	...	...	...	...	...	...	...	...	...
11.....	...	...	...	...	...	...	...	...	...
12.....	...	...	...	...	...	...	9.1	...	0.2
13.....	1.2	...	...	0.7	...	...	...	...	0.7
14.....	3.7	...	...	...	...	...	...	...	0.7
15.....	...	...	...	...	...	...	...	...	...
17.....	...	...	33.3	21.3	11.8	42.9	27.3	33.3	18.9
18.....	...	...	...	...	...	...	...	...	...
19.....	26.8	6.7	16.7	5.5	5.9	...	...	5.6	9.7
22.....	...	...	...	...	...	...	...	...	...
23.....	...	...	...	...	...	...	...	...	...
24.....	...	...	...	...	...	...	...	...	...
26.....	...	...	...	0.7	...	...	...	...	0.4
28.....	...	...	...	...	...	...	...	...	...
29.....	...	...	...	0.7	...	...	...	...	0.4
30.....	19.5	13.3	36.7	21.7	...	57.1	54.6	55.6	25.0
31.....	...	...	...	...	...	...	...	...	...
32.....	...	...	...	...	...	...	...	...	...
33.....	...	...	...	...	...	...	...	...	...
36.....	2.4	...	3.3	...	...	...	...	...	0.7
37.....	2.4	...	...	...	...	...	...	...	0.4
38.....	...	...	...	...	...	...	...	...	...
39.....	...	...	...	...	...	...	...	...	...
40.....	...	...	...	...	...	...	...	...	...
41.....	...	...	...	...	...	...	...	...	...
43.....	...	...	...	0.4	...	...	...	...	0.2
44.....	...	...	...	...	...	...	...	...	...
46.....	...	...	...	0.4	...	...	...	...	0.2

vidual strain to persist. Superficially it would appear that newly acquired strains have the ability to supplant those previously present and repetitive infestation to hasten the development of local tissue immunity.

SIGNIFICANCE OF SPECIFIC TYPES OF GROUP A HEMOLYTIC STREPTOCOCCI

It appears, therefore, that while the typing of group A hemolytic streptococci provides a valuable laboratory method for epidemiologic studies, the ability to produce clinical disease is not a quality inherent or possibly restricted to certain types. Rather, it seems to be a function of the invasiveness and virulence of the specific strain involved and subject to the usual variations encountered in these characteristics of bacteria. It is admitted that in this experience certain types were responsible for the majority of the clinical disease studied, but the fluctuation in incidence of the individual types at different posts and at the same post at different portions of the winter season indicates the probability that, in other seasons or other geographic areas, types which were of minimal importance in this survey may play predominant roles.

TABLE 4.—*Types of Hemolytic Streptococci Isolated from Patients Developing Acute Rheumatic Fever Compared with Those Isolated from the Same Individuals at the Time of the Antecedent Streptococcic Infection*

	Antecedent Infection	After Onset of Rheumatic Fever	
		Unchanged*	Changed*
Negative cultures	4	2	4
Group D	1	..	..
Group H	..	..	2
Group A	..	..	1
Type 1	..	..	2
Type 3	4	1	4
Type 4	..	..	1
Type 6	1	..	1
Type 12	2	..	..
Type 14	5	2	2
Type 17	2	..	..
Type 19	10	1	4
Type 24	1	..	1
Type 26	..	..	1
Type 30	2	1	1
Type 36	4	1	4
Total	36	8	28

* Unchanged = number of strains unchanged since preceding examination; same individual. Changed = number of strains differing from preceding examination; same individual.

Note.—In 6 of 36 individuals the same Lancefield type was isolated at the two examinations.

A summary of this bacteriologic experience is presented in table 6. Recognizing the inaccuracies that are inherent in studies of this type which negate the importance of minor differences in numerical values, there is nevertheless a well defined tendency for streptococcic disease to occur with greater frequency at posts with high post survey rates than in those with low rates of this type. However, even at posts with low post survey rates for hemolytic streptococci this organism may be found with frequency in the upper respiratory infection which does occur. A correlation also exists between post survey rates, scarlet fever and rheumatic fever. A comparison of scarlet fever rates and rheumatic fever rates in over two hundred other Air Forces installations confirms the point that rheumatic fever rarely occurs in areas of low frequency of scarlet fever. The thesis may be advanced that, if the streptococcus etiology of rheumatic fever is correct, even in areas of low incidence of streptococcic disease, rheumatic fever should occur with approximately the same order of relative frequency with which it is found in epidemic areas. This does not occur, however, and such mathematical expectations could be filled only if these organisms possessed fixed qualities of virulence and their potential hosts had fixed degrees of resistance.

TABLE 5.—*Types of Lancefield Group A Hemolytic Streptococci Isolated from Patients with Rheumatic Fever: A Comparison of Observations at Posts of Low and of High Incidence of This Disease*

Cultures*	Buckley Field (Denver) 1st Un	1st Ch	2d Un	2d Ch	3d Un	3d Ch	4th Un	4th Ch	5th Un	5th Ch	6th Un	6th Ch	7th Un	7th Ch
No hemolytic streptococci	19	..	7	17	12	9	12	5	6	2	5	1	3	..
Group A—Untyped	7	..	..	2	1	2	..	1	..	..	..	..	..	..
1	5	..	..	5	..	2	2	3	1	..	..	..	..	..
3	8	..	1	7	1	1	..	5	..	..	..	..	..	..
4	..	..	..	1	..	..	..	..	..	..	..	..	..	..
5	1	..	..	..	..	..	..	..	..	..	..	..	..	..
6	3	..	..	..	..	1	..	..	..	..	..	..	..	..
14	5	..	..	14	3	3	1	1	1	..	1	..	..	..
17	1	..	..	1	..	2	..	..	..	..	..	..	..	..
18	..	..	..	..	..	1	..	..	..	..	..	..	..	..
19	14	..	..	3	1	5	2	3	2	1	..	..	..	..
24	1	..	..	1	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	1	..	..	..	..	..	..	..	..
30	3	..	..	3	1	3	1	2	..	3	..	1	..	..
33	1	..	..	..	..	..	..	..	..	..	..	..	..	..
36	6	..	1	..	..	1	..	1	..	2	..	..	..	..
Total	74†	..	9	54	19	31	18	21	10	8	6	2	3	..
Davis-Monthan Field (Tucson)														
No hemolytic streptococci	74	..	48	24	16	6	18	2	15	4	15	3	4	..
Type 1	14	..	10	..	2	3	4	..	4	..	2	..	..	..
3	3	..	4	..	2	1	3	..	3	..	..	..	..	..
6	3	..	3	..	3	..	3	..	..	..	..	..	..	..
12	1	..	..	..	..	..	..	..	..	..	..	..	..	..
17	9	..	5	4	6	1	7	..	5	..	4	..	..	..
19	25	..	19	4	7	2	8	..	8	1	7	..	2	..
24	1	..	..	..	..	..	..	..	..	..	..	..	..	..
26	1	..	..	1	1	..	1	..	1	..	..	..	..	..
28	2	..	..	1	..	..	1	1	1	1	..	..	..	..
30	17	..	14	3	6	1	6	2	7	..	7	..	..	..
36	5	..	4	4	2	..	2	1	2	..	..	..	..	..
Total	157	..	107	41	45	14	53	6	46	6	35	3	6	..

* "Un" = Number of strains unchanged since preceding examination; same individual. "Ch." = Number of strains differing from preceding examination; same individual.

† Two cultures contained two types of hemolytic streptococci.

TABLE 6.—*A Comparison of Streptococcus Carrier Rates, Streptococcic Disease and Rheumatic Fever at Geographically Separated Army Air Forces Installations*

Posts	Buckley Field, Colo.	Kearns Field, Utah	Amarillo Field, Texas	Lincoln AAF, Neb.	San Antonio ACC, Texas	Drew Field, Fla.	Davis Monthan Field, Ariz.
1. Post survey Rates * (carrier rates) group A, hemolytic streptococci	30	9.2	13	9.7	0.3	1.4	0.7
2. Per cent group A * hemolytic streptococci in admissions for upper respiratory infections	58	24	50	37	6.3	2.8	49
3. Rates, upper respiratory infections	1,104	755	586	517	193	149	257
4. Rates, group A hemolytic streptococci upper respiratory infections	640	181	293	192	12.2	4.2	128
5. Rates, scarlet fever	23	50	26	15	5	1	5
Rates, rheumatic fever	49	21	11	10	Below 2	Below 2	Below 2

* These rates represent averages on available studies. Since surveys were not done each week at all posts, they must be taken as indicating general trends rather than actual rates for the entire period.

Note: $\frac{\text{Line 2} \times \text{line 3}}{100} = \text{Line 4}$

THE SIGNIFICANCE OF THIS INFORMATION FROM THE STANDPOINT OF MILITARY MEDICINE

Ample evidence is at hand to indicate that a persistence or recurrence of rheumatic activity is related to a persistence or recurrence of the precipitating bacterial infection.[5] Jones[6] has clearly shown that an initial episode of rheumatic fever predisposes to further attacks of the disease.

For these reasons the Army Air Forces has adopted the plan of evacuating patients with rheumatic fever to suitable Army Air Forces Regional Station Hospitals, which are picked on the basis of low incidence of streptococcic disease, low incidence of rheumatic fever and suitability for the convalescent care of this disease. At the present time all Air Forces personnel developing rheumatic fever are being moved to such installations when conditions permit.

Whenever practicable this is done by air, which permits transfer by litter at a very early stage of the disease. Approximately 200 cases per month are being moved by air at the present time. In those situations in which air evacuation is not feasible, the movement is made by train at a suitable time in the course of the disease.

It may be appropriate to comment on the overall program for the care of rheumatic fever patients in the Army Air Forces. This disease produces permanent noneffectiveness in several ways. Approximately one third develop permanent cardiac lesions. A second group of significant size develop neuroses usually of a cardiac or neurocirculatory type. A third group are recurrently disabled because of further attacks of the disease.

It is hoped that early diagnosis and proper treatment with early transfer to areas of low incidence will limit the incidence of residual valvular disease. Great care is being taken during the period of activity of the disease not to alarm the patient about the cardiac aspects of the problem. He is then kept in the area of low incidence for a minimum period of six months. During the initial part of the period and following the cessation of the active phase of the disease he receives a suitable period of physical rehabilitation. By concentrating these patients in rather large groups it has been found possible to adapt the convalescent training program more effectually to their specific needs. Following rehabilitation they are given useful employment about the post as a phase of the convalescent program and under medical supervision.

At the termination of the six months period or any additional length of time considered desirable for maximum improvement, the patient is evaluated on the basis of his then existing physical condition and suitable disposition or further military assignment made.

CONCLUSIONS

1. Bacteriologic studies at eight Army Air Forces installations during the period Jan. 1 to April 21, 1944 reveal that group A hemolytic streptococci isolated from cases of upper respiratory disease, scarlet fever and acute rheumatic fever belonged to a multiplicity of Lancefield types.

2. At none of the posts studied was a single epidemic strain responsible for the streptococcic disease observed.

3. At the posts studied bacteriologic data obtained after the development of acute rheumatic fever were not applicable to the preceding upper respiratory infections.

4. An apparent correlation was observed between post survey (carrier) rates from group A hemolytic streptococci, incidence rates for scarlet fever and the incidence of acute rheumatic fever.

5. Swift, H. F.: Rheumatic Fever, in Cecil, R. L.: A Textbook of Medicine, ed. 6, Philadelphia, W. B. Saunders Company, 1943, pp. 435-450.

6. Jones, T. D., and Mote, J. R.: The Clinical Importance of Infection of the Respiratory Tract in Rheumatic Fever, J. A. M. A. **113**: 898-902 (Sept. 2) 1939.

THE PREVENTION OF RECURRENCES IN RHEUMATIC SUBJECTS

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Rheumatic fever is a recurrent disease, and the danger of developing permanent organic heart disease increases with every recurrence. These considerations have stimulated a wide search for measures to prevent the recurrent attacks. For years it has been recognized that infections of the nasopharynx, especially sore throat and tonsillitis, frequently precede exacerbations of rheumatic fever. On this account it has been almost universal practice to perform tonsillectomy and adenoidectomy on rheumatic patients in the quiescent stage in the hope of decreasing the frequency and intensity of such infections of the upper respiratory tract and avoiding rheumatic flare ups. However, this hope has not been fulfilled; tonsillectomized patients continue to have rheumatic recrudescences nearly as often as before, although Allan and Baylor[1] have shown that there seems to be less likelihood of rheumatic heart disease developing after tonsillectomy in those who had escaped it up to the time of the operation.

Since the publication of Coburn's[2] monograph "The Factor of Infection in the Rheumatic State" in 1931 the close etiologic relationship between the beta hemolytic streptococcus and rheumatic fever has become increasingly clear. It is not surprising, therefore, that tonsillectomy is relatively ineffective in forestalling rheumatic recurrences, since beta hemolytic streptococcus infections of the throat continue whether the tonsils and adenoids are present or not. In this regard Coburn[3] has emphasized the fact that rheumatic fever is most frequently preceded by rather superficial infections such as mild pharyngitis, in contrast to glomerulonephritis, in which "deeper" antecedent infections such as otitis media and sinusitis are more common.

Because the tropical and subtropical zones are relatively free from the hemolytic streptococcus and from rheumatic fever, Coburn sent a group of 10 rheumatic fever patients to Puerto Rico for six months and noted that no detectable evidence of fresh rheumatic activity occurred in the patients while in Puerto Rico but that definite recrudescences followed shortly after their arrival in New York in the hot summer months. Since that time many physicians have sent their private patients to Florida or Arizona for the winter and spring months, when rheumatic fever is most prevalent in the

Read in a symposium on "Rheumatic Fever" before the Section on Pediatrics at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 16, 1944.

1. Allan, W. B., and Baylor, J. W.: The Influence of Tonsillectomy upon the Course of Rheumatic Fever and Rheumatic Heart Disease, Bull. Johns Hopkins Hosp. **62**: 111, 1938.

2. Coburn, A. F.: The Factor of Infection in the Rheumatic State, Baltimore, Williams & Wilkins Company, 1931.

3. Coburn, A. F.: Faulty Disposal of Streptococcus Hemolyticus in Relation to the Development of the Rheumatic Lesion, Tr. & Stud. Coll. Physicians, Philadelphia **8**: 91, 1940.

North. This method of prevention of rheumatic recurrences has been fairly effective, but its usefulness is greatly limited by the expense and inconvenience of the undertaking, which must be repeated yearly for five or more seasons if it is to accomplish its object.

In 1936 among the early reports published abroad on the therapeutic value of sulfanilamide was one[4] which showed that smaller than therapeutic doses of sulfanilamide, administered before the streptococcus had had an opportunity to invade and multiply in the tissues, were effective in preventing beta hemolytic streptococcus infections in mice. This discovery offered the opportunity my associates and I had been searching for, and we immediately embarked on the endeavor to prevent acute hemolytic streptococcus infections and subsequent rheumatic recrudescences by giving small daily doses of sulfanilamide to a group of rheumatic subjects over a long period of time.

For four years, from October or November to June, we administered prophylactic sulfanilamide in doses of 1 to 1.2 Gm. a day to a group of adolescents and young adults and compared the results with those observed in an untreated control group of similar rheumatic subjects.[5] The results, both as regards inhibiting beta hemolytic streptococcus infections and preventing rheumatic recrudescences, were strikingly favorable. During the four year study, not a single major attack of rheumatic fever occurred in any patient while taking sulfanilamide prophylactically. In contrast, 15 major rheumatic episodes were observed among the control patients during the same period (an incidence of 10 per cent), and 5 more control patients suffered from acute illnesses which might have been rheumatic in character. None of the patients receiving sulfanilamide prophylactically suffered from any acute beta hemolytic streptococcus infection during the period of treatment in contrast to the control group, and throat cultures positive for the beta hemolytic streptococcus were three times less common among the treated subjects than among the controls.

Coburn and Moore[6] gave prophylactic sulfanilamide to a group of rheumatic children and observed only 1 rheumatic recurrence among 184 subjects. Other investigators,[7] working chiefly with children, undertook the same problem, and all have reported excellent results in that rheumatic recurrences have been rare or absent during the period of prophylactic treatment. These reports have now been published in detail, so that I will only summarize them briefly by saying that up to the present in civilian life prophylactic sulfanilamide has been administered to rheumatic subjects for a total of 815 patient seasons over a period of seven years. Only 8 have had recrudescences, an incidence of less than 1 per cent, while the incidence among control groups ranged from 10 to 35 per cent.

During the past winter the United States Navy conducted the most extensive program of mass prophylaxis of respiratory disease and rheumatic fever which has even been undertaken. Capt. T. J. Carter and Comdr. Alvin F. Coburn, who have directed the program, have kindly given me permission to read the detailed reports and to summarize their results. The program was inaugurated in the attempt to reduce the incidence of streptococcic infections, which always account for much loss of time through illness during the late winter and early spring in any center where large groups of young men are living in close quarters, and, especially, to prevent acute rheumatic fever, which had become quite prevalent in some of the training centers. Prophylactic sulfadiazine, usually 1 Gm. a day, was administered to part of the personnel of several training centers from Dec. 1, 1943 to March 1, 1944, with other groups at the same centers serving as controls; about 250,000 men were taking the prophylactic medication, and an equal number were observed as controls.

During this period hospitalization for severe respiratory disease was reduced 80 to 90 per cent. Streptococcic infections were reduced 85 per cent and the incidence of rheumatic fever dropped equally sharply, so that in one center there was only 1 case among the treated group to every 14 cases among the controls. The attack rate of rheumatic fever decreased gradually over the course of several weeks, indicating that prophylactic sulfadiazine interferes with the development of acute rheumatic fever by preventing the antecedent streptococcic infection. If the drug is started during the latent period, after the streptococcic infection has occurred but before the appearance of acute rheumatic fever, the acute rheumatic attack develops regardless of the medication.

The Effect of Prophylactic Sulfadiazine on the Attack Rate of Rheumatic Fever and Scarlet Fever

	Week of Prophylactic Sulfadiazine Administration				
Attack Rate	1	2	3	4	5
Rheumatic fever.....	87	45	45	19	6
Scarlet fever.....	70	45	0	0	0

The difference between the cause of acute rheumatic fever, which we now conceive of as an allergic state analogous to serum sickness, usually produced by sensitization to the beta hemolytic streptococcus, and the cause of scarlet fever, which is directly produced by infection with the beta hemolytic streptococcus, is shown in the accompanying table.

Here is the incidence of rheumatic fever and scarlet fever week by week after sulfadiazine prophylaxis was started at one of the naval training centers. The lag shown in the tapering off of rheumatic fever as compared with scarlet fever corresponds very well to the conception of a latent period of one to four weeks following the original streptococcic infection before rheumatic fever appears.

During the mass prophylactic sulfadiazine program, meningococcic meningitis practically disappeared, and pneumococcic infections were reduced about 50 per cent. Virus infections were not definitely affected, although there was some drop in the incidence of "catarrhal fever," probably indicating that some grip

4. Buttle, G. A. H.; Gray, W. H., and Stephenson, D.: Protection of Mice Against Streptococcal and Other Infections by P-Aminobenzenesulfonamide and Related Substances, Lancet **1:** 1286, 1936.

5. Thomas, C. B., and France, R.: A Preliminary Report of the Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever, Bull. Johns Hopkins Hosp. **64:** 67, 1939. Thomas, C. B.; France, R., and Reichsman, F.: The Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever, J. A. M. A. **116:** 551 (Feb. 15) 1941.

6. Coburn, A. F., and Moore, L. V.: Prophylactic Use of Sulfanilamide in Streptococcal Respiratory Infections, with Especial Reference to Rheumatic Fever, J. Clin. Investigation **18:** 147, 1939.

7. Stowell, D. D., and Button, W. H., Jr.: Observations on the Prophylactic Use of Sulfanilamide on Rheumatic Patients, J. A. M. A. **117:** 2164 (Dec. 20) 1941. Thomas, C. B.: The Prophylactic Treatment of Rheumatic Fever by Sulfanilamide, Bull. New York Acad. Med. **18:** 508, 1942. Chandler, C. A., and Taussig, H. B.: Sulfanilamide as a Prophylactic Agent in Rheumatic Fever, Bull. Johns Hopkins Hosp. **72:** 42, 1943. Kuttner, A. G., and Reyersbach, G.: Prevention of Streptococcal Upper Respiratory Infections and Rheumatic Recurrences in Rheumatic Children by Prophylactic Use of Sulfanilamide, J. Clin. Investigation **22:** 77, 1943. Hansen, A. E.; Platou, R. V., and Dwan, P. F.: Prolonged Use of a Sulfonamide Compound in Prevention of Rheumatic Recrudescences in Children, Am. J. Dis. Child. **64:** 963 (Dec.) 1942. Feldt, R. H.: Sulfanilamide as a Prophylactic Measure in Recurrent Rheumatic Infection: A Controlled Study Involving One Hundred and Thirty-One "Patient-Seasons," Am. J. M. Sc. **207:** 483, 1944.

infections are actually caused by streptococci. The program was so efficacious that in March the entire personnel at eight naval training centers were placed on daily doses of sulfadiazine, with reversal of the rising incidence of respiratory diseases among the previously untreated personnel.

Evidence is being accumulated during this program as to the minimal effective prophylactic dose; at present it appears that 0.5 Gm. a day is slightly less effective than 1.0 Gm. a day in adults. Mild drug reactions occurred in 0.3 to 0.6 per cent, but severe reactions were exceedingly rare.

Two other preventive measures which I can only mention briefly are, first, the attempt to immunize rheumatic children by repeated injections of a filtrate of Streptococcus hemolyticus. Earlier investigators [8] were unable to find any evidence that this form of immunization increased resistance to streptococcic infections or rheumatic recrudescences. Wasson [9] and Wasson and Brown,[10] however, reported more than four times as many attacks among the control patients as in immunized subjects, although 10 per cent of those treated still developed rheumatic recrudescences. The second method is that of giving salicylates prophylactically, since it had been shown [11] that acetylsalicylic acid usually prevents the arthritis of serum sickness and that in patients so treated the production of precipitins against horse serum was inhibited. When doses of 20 to 30 grains (1.3 to 2 Gm.) were given daily over a period of months, the incidence of recurrences did not seem to differ greatly between the treated and the control groups.[12] However, Schlesinger [13] and later Coburn and Moore [14] gave salicylates daily for one month after the onset of pharyngitis in rheumatic children and found it quite effective in reducing the incidence of rheumatic recrudescences. At present neither of these two prophylactic methods has been widely enough used to gain a clear statistical evaluation of their merits. Both are still in the experimental stage, but it seems probable that neither immunization to streptococcus filtrates nor prophylactic salicylates offers nearly the degree of protection against rheumatic recurrences that is afforded by sulfonamide prophylaxis.

Small daily doses of sulfonamides, therefore, seem to be the most effective method of preventing rheumatic recrudescences that has yet been found, and I believe that such prophylaxis should be given to all children and young adults who have had one or more unequivocal attacks of acute rheumatic fever. Sulfadiazine is probably the drug of choice, although sulfanilamide affords just as efficient protection and is not significantly toxic when low doses are given. It may be that sulfamerazine will some day replace the other drugs on account of its slower rate of excretion, but no large scale study of sulfamerazine prophylaxis of rheumatic fever has yet been carried out.

Since the dose of 1 Gm. daily of sulfadiazine used in the Navy program corresponds extremely closely with our dosage of sulfanilamide, in contrast to the 2 or 3 Gm. daily used by some investigators, and since excellent protection is afforded by this dosage, there seems no reason to give more, and unless further evidence to the contrary is obtained it would usually be unwise to give less either to children or to adults. In the Navy, for purposes of convenience, two 0.5 Gm. tablets were given at once every twenty-four hours, but since the drug is largely excreted in a few hours 0.5 Gm. every twelve hours offers greater protection, at least theoretically.

As soon as a patient has reached a satisfactory convalescent stage following acute rheumatic fever, that is, when he is free from arthritis, fever and other symptoms in the absence of salicylates, prophylactic sulfonamide should be started. In my experience it is not necessary to wait until the sedimentation rate is entirely normal. It is important to start prophylaxis before the patient returns to his home environment from hospital or convalescent home, to avoid immediate reinvasion of the nasopharynx by the beta hemolytic streptococcus. In an effort to avoid toxic reactions, I should like to suggest starting most patients on 0.5 Gm. a day for three weeks, during which time the patient should be protected from close contact with crowds, after which the dose should be increased to 1 Gm. a day.

The patient should then continue to take 1 Gm. a day, day in and day out, summer and winter, year in and year out, for at least five years, and probably longer in younger children, if the patient is to be safely steered through the period when recrudescences are most frequent. This seems a long time, but in my experience patients become thoroughly accustomed to taking it, and, rightly or wrongly, ascribe an unusual state of well being to the drug, so that they are loath to stop. They no longer suffer from most of the bacterial infections, although they still may have the common cold in mild form, influenza and the virus diseases of childhood. Several of my patients have noticed the complete abatement of various minor ailments, such as recurrent erysipeloid infections of the face or otitis media, from which they formerly suffered. One of my patients has taken prophylactic sulfanilamide successfully for nearly eight years!

How great is the danger of toxic reactions? Statistically, it is very small, as has been convincingly shown by the United States Navy program. Mild reactions such as transient skin eruptions, which were annoying but not dangerous, developed in from 3 to 6 men out of 1,000, while serious reactions, such as agranulocytosis and exfoliative dermatitis, were exceedingly rare among the 500,000 men who have received prophylactic sulfadiazine at one time or another during the last six months. Since the risk of serious toxicity during treatment is much less than the chance of untreated rheumatic subjects developing recrudescences leading to serious rheumatic heart disease, we should certainly treat the rheumatic patient to the best of our present therapeutic knowledge with prophylactic sulfonamide therapy.

What can the physician do to safeguard a patient to whom sulfonamide prophylaxis is given? First, he should see that the patient is in the best possible physical

8. Wilson, M. G.; Josephi, M. G., and Lang, D. M.: Intravenous Vaccination with Streptococci: Its Influence on Incidence of Recurrence of Rheumatic Fever in Children, Am. J. Dis. Child. **46**: 1329 (Dec.) 1933. Coburn, A. F., and Pauli, R. H.: Studies on Immune Response of Rheumatic Subject and Its Relationship to Activity of Rheumatic Process: Active and Passive Immunization to Hemolytic Streptococcus in Relation to Rheumatic Process, J. Clin. Investigation **14**: 763, 1935.

9. Wasson, V. P.: Immunization Against Rheumatic Fever with Hemolytic Streptococcus Filtrate, Am. Heart J. **15**: 257, 1938.

10. Wasson, V. P., and Brown, E. E.: Immunization Against Rheumatic Fever with Hemolytic Streptococcus Filtrate, Am. Heart J. **20**: 1, 1940; Further Studies in Immunization Against Rheumatic Fever, ibid. **23**: 291, 1942.

11. Derick, C. L.; Hitchcock, C. H., and Swift, H. F.: Effect of Anti-Rheumatic Drugs on the Arthritis and Immune Body Production in Serum Disease, J. Clin. Investigation **5**: 427, 1928.

12. Leech, C. B.: Value of Salicylates in Prevention of Rheumatic Manifestations, J. A. M. A. **95**: 932 (Sept. 27) 1930. Perry, C. B.: Value of Salicylates in Prevention of Rheumatic Relapses, Lancet **1**: 649, 1938.

13. Schlesinger, B.: Public Health Aspect of Heart Disease in Childhood, Lancet **1**: 649, 1938.

14. Coburn, A. F., and Moore, L. V.: Salicylate Prophylaxis in Rheumatic Fever, J. Pediat. **21**: 180, 1942.

condition, with adequate diet, and without unusual factors affecting his health or environment during the early weeks of treatment. It was noted in the Navy that the number of mild toxic dermal reactions was nearly four times as great among new recruits who received prophylactic sulfadiazine while they were being immunized to typhoid, tetanus and so on as among seasoned personnel. Second, the dose may be started at 0.5 Gm. a day, increasing to 1.0 Gm. a day after three weeks. Third, parents or patient should be instructed to report any rash or sore throat immediately, without further dosing with sulfonamides by themselves or by any other physician. Fourth, total leukocyte counts should be made frequently during the early weeks of treatment, since agranulocytosis rarely if ever develops after the first six weeks and usually occurs between the end of the second and the fourth week.

It is to be hoped that before the war is over studies conducted among large groups of men in the armed forces may point the way toward reducing toxic reactions to the vanishing point. In conclusion I should like to express the belief that, in spite of the difficulties involved, the increasingly widespread use of prophylactic sulfonamides will bring tremendous advance in the problems of rheumatic fever and rheumatic heart disease.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. WILSON AND ROSE LUBSCHEZ, DR. JONES, DR. RUTSTEIN, MAJOR VAN RAVENSWAAY AND DR. THOMAS

DR. JOHN R. PAUL, New Haven, Conn.: In trying to determine where the hemolytic streptococcus belongs among the several factors responsible for rheumatic fever, one has the advantage of the experience of the Army during the last three years, in which epidemics of rheumatic fever have been reported in this country for the first time. Such epidemics have put a new light on the subject. Although there have been plenty of isolated cases of rheumatic fever in which it has been difficult to trace any preceding evidence of hemolytic streptococcus infection, I think it is safe to say that there have been no records of epidemics without preceding epidemics of hemolytic streptococcus infection. Dr. Wilson's analyses of recurrence rates are important to those who must try to plan postconvalescent therapy. A program such as Dr. Thomas has outlined may be based, for instance, on the rates at which recurrences may be expected. Dr. Jones has rightfully laid great stress on diagnosis of the acute disease. Is the patient rheumatic or not? This is a big decision if it determines whether or not to embark on four, five or six years of prophylactic sulfonamide therapy. The point that Dr. Rutstein made about the role of the cardiac clinic in establishing the rheumatic register deserves comment. There has been much agitation lately to make rheumatic fever a reportable disease. It has been tried in various parts of the country with varying success. Difficulties are that if rheumatic fever is to be reportable one must first give reasons for making it reportable, one must define diagnostic criteria and one must have facilities for taking care of patients who are reported. If, however, there is a cardiac clinic and it maintains a register, it can function as a local clearing house for cases of rheumatic fever and can be concerned with therapeutic facilities and data on prevalence as well. Major van Ravenswaay has shown what a tremendous opportunity the Army has to outline the geography of this disease. Standard methods can now be employed in attempting to determine how prevalent hemolytic streptococcus types are in various areas and what their correlation with rheumatic fever has been. I should like to ask him whether he has recorded the prevalence of another complication or manifestation of hemolytic streptococcus infection, namely acute nephritis.

COLONEL W. PAUL HOLBROOK, M. C., A. U. S.: The present knowledge regarding the etiology of acute rheumatic fever may be illustrated by describing certain observations made concerning this disease in the Army Air Forces. When a large number of men from all parts of the country are thoroughly mixed and then distributed by posts, some will be located in areas of low incidence and some in areas of high incidence of acute rheumatic fever. Those in areas of low incidence will show a low rate of group A hemolytic streptococcus upper respiratory tract infections as contrasted to a high rate among those in areas of high incidence. Although the total numbers of cases in the two groups contrast sharply, it may be pointed out that upper respiratory disease associated with group A hemolytic streptococci does occur in areas of low incidence of rheumatic fever and proportional incidence rates of the latter disease are not found. As a further result of the shuffling of troops, persons with a family history of rheumatic fever who perhaps are hereditarily susceptible are stationed as frequently in areas of low incidence as in areas with a high incidence of this disease. Since the susceptibles do not develop rheumatic fever in areas of low incidence, it seems that susceptibility cannot be considered the sole explanation. There is evidence to suggest that climate and the invasiveness of the strains of hemolytic streptococci involved may also be important factors. I do not know what all the etiologic factors are, nor do I know how they are interrelated. We can all agree that probably a combination of factors is required to produce acute rheumatic fever in an epidemic form.

DR. STANLEY GIBSON, Chicago: Two years ago Dr. Brown and I at the Children's Memorial Hospital undertook a study of sulfonamide prophylaxis in the recurrence of rheumatic fever. We selected 50 children who had been in the hospital during the previous year with a rheumatic episode. All these children were under the age of 12, so that if I understood Dr. Wilson correctly I believe both as regards age and as regards the time of their previous episode they should be candidates for recurrence of rheumatic fever. About 44 of these children went through the experiment. The other 6 failed to cooperate. None had to be left out because of their inability to take the 1 Gm. of sulfanilamide daily which was given to them. The drug was kept up from about the 1st of October until the 1st of July the following year. During that period we had no single recurrence of a rheumatic episode that we could recognize clinically. We had used up about all of our children who had had an episode during the preceding year, so that we did not attempt a control group. At the end of the first year we checked over these children and found that only 3 out of our 50 children without sulfonamides had had a recurrence of rheumatic fever. However, 1 of these children had a severe recurrence and is much more crippled as a result of that rheumatic recurrence. The second year is almost up and the 1st of July we shall check over our children again. We haven't our figures complete now as to how many recurrences have occurred during the second year. I know this much: One who had had relatively little cardiac involvement previously came back into the hospital about two months ago with a fulminating carditis and promptly died. I do not know whether the statistical method is completely applicable or not in these instances. If the sulfonamides do protect, it was terribly important for that child to have them. I should like to ask Dr. Thomas in her closing discussion to state whether or not any instances of death have occurred from recurrent rheumatic infection in an individual receiving sulfonamides. I am sure I do not know from our small study whether they protect or whether they do not.

DR. JOHN W. SCOTT, Lexington, Ky.: Valuable as the cardiac clinic is, there is, I think, danger of magnifying its function in this connection. Its function should be that of the counselor rather than of the arbiter. That the last word must be said by a specialist in cardiology or by a specialist in anything else is to overstandardize the profession and to contribute to the decay and not the upbuilding of the practice of medicine.

DR. J. D. KEITH, Nova Scotia: I should like to ask Dr. Thomas why she would not use the sulfonamides.

DR. PAUL F. DWAN, Minneapolis: Because of the complex nature of this disease—complex mostly because of the chronicity and tendency to recurrence and because of the fact that

we are dealing with growing children—many ramifications in this matter have been discussed. We know that we must maintain proper environment for these children, that they must receive the best possible medical aid and that their education must be maintained during the convalescent period. The magnitude of this problem, in my mind, places it beyond the scope of any agency, whether governmental or private. It is becoming increasingly obvious that some aid must be given to the families of rheumatic children and to the physician who is trying to handle the cases, because of the expensive nature of any home or hospital care. The disease is difficult to handle in the home because it is almost impossible to maintain discipline and proper bed rest for the period of time necessary. It may be in this field that governmental or social aid would be of its greatest value. The various rheumatic fever programs which have been set up have proved to be of great value in the communities where they have been established. Most of them have worked on the basis of giving a temporary lift to the situation and maintain themselves only in a manner of assisting the patients over the period of his acute illness and convalescence and turning him back to his private physician. I feel that this is as it should be and that there is no need for a complete socialization of rheumatic fever cases to the extent that the private physician is eliminated from the picture; the problem is so great that any such management would be inefficient and might be deleterious to the patient and the patient-physician relationship.

Dr. May G. Wilson, New York: I think that perhaps I can answer Dr. Paul's question by using our rates on Dr. Gibson's study. We would have expected that between 4 and 8 patients in his group would have a recurrence during the time of treatment. I have analyzed every published study, and this is the first one that would give me any reason to believe that chemotherapy prophylaxis is effective in preventing rheumatic recurrences. In the other studies to which we applied appropriate rates we found that there was no evidence of a significant difference between the treated and the control groups with the exception of one study, and in that study the control group showed bias. Our purpose in the paper we presented was not to discourage chemotherapeutic prophylaxis in rheumatic fever research but to point out that future studies must take into account the natural history of the disease. If studies are planned properly, we should have our answer to the efficacy of chemotherapeutic prophylaxis in rheumatic fever in civilian life.

Dr. T. Duckett Jones, Boston: I think that Dr. Dwan is assuming that those interested in the development of rheumatic programs are trying to take the problem out of the hands of the physician. It is entirely a mistaken conception. It is high time that the medical profession in general assumed enough interest in the disease to develop community programs. We need not get into argument about whether or not we are going to take the thing out of the hands of local physicians: that is irrelevant. Perhaps the most pertinent of the armed service's materials so far as evaluation is concerned has been presented today. I wish that Major van Ravenswaay had not compared the rheumatic fever incidence with scarlet fever, as it is notoriously unreliable when compared with known incidences of streptococcic diseases in various parts of the country. I think there could have been a closer correlation. I can certainly agree with him in general. Until complete data of all these studies are available, I think it is foolhardy to accept the sulfonamides or any other means of prophylaxis as certain and sure. I feel that it is rather unsafe for the future of our knowledge of rheumatic fever to accept in as unequivocal a way as Dr. Thomas has data which are not completely analyzed and when she has not had an opportunity to go over everything. It may ultimately result in holding up knowledge of rheumatic fever for a good many years. I am not sure that the association between the hemolytic streptococcus index and rheumatic fever is the whole story, and I think that we must keep open minds until such time as more evidence is available. I am not against prophylaxis with sulfonamides, but I believe that their use should be distinctly experimental at the present time and not be given to everybody in the country.

Dr. David D. Rutstein, New York: My paper was written from the point of view of the needs of the rheumatic patient. I did not say that the diagnosis could be made only by those qualified by the specialty boards. I did state that the American Heart Association standards require the cardiac clinic director to have qualifications equivalent to those of the indicated specialty boards. Specialty board qualifications were not promulgated by public health agencies but were established under the egis of the American Medical Association. I also did not say that the general practitioner should transfer his patients to the clinic, but I did say that the clinic should offer guidance to the general practitioner in the diagnosis and treatment of his patient. The inability of the general practitioner to diagnose this disease adequately is a matter of fact and not of opinion. The data presented resulted from an analysis of 21,293 school records divided among twenty-nine school systems. In eight of the twenty-nine not one diagnosis of rheumatic fever had been made, while there was one school in which 13.1 per cent, or 1 out of every 7 pupils, were labeled as rheumatic. Other experiences support these data. Dr. Thomas's recommendations would influence the nature of the community program, but Colonel Holbrook indicated that the military experience does not necessarily apply to civilians. I should like to make three points which support that statement: 1. The medical services in the armed forces have complete control over their patients, and by giving sulfonamides to all groups the initial attack of rheumatic fever may be prevented. The civilian program must be limited to the prevention of recurrences unless sulfonamides are given to every child. 2. The armed forces have facilities for the determination of the absence of rheumatic activity. This must be determined before sulfonamide prophylaxis is inaugurated. In many civilian communities such facilities are not easily available. 3. Constant supervision of patients receiving sulfonamides is necessary; this may be difficult to accomplish in the civilian population. I agree with Dr. Jones that there is an unquestionable relationship of the hemolytic streptococcus to rheumatic fever and that the exact relationship is not clear. The evidence for that relationship is based on post hoc ergo propter hoc reasoning, and it is well to remember that thus far Koch's postulates have not been fulfilled.

Major A. C. van Ravenswaay, M. C., A. U. S.: Dr. Paul inquired about the incidence of acute glomerular nephritis at Army Air Force installations in relationship to the incidence of acute rheumatic fever. We have been surprised to observe that the incidence of acute glomerular nephritis has been extremely low, although it has been impossible to get any statistically significant information. Major Frank Foster of Buckley Field tells me that during the last winter season he saw over 350 cases of acute rheumatic fever and 4 cases of acute glomerular nephritis. In regard to Dr. Jones's comments about the controls which were used in the sulfadiazine prophylaxis studies both by the Army Air Forces and by the Navy, I hope that at some future time we shall have a chance to go over with Dr. Jones the exact nature of the controls which were used and which we and others believe were quite satisfactory. In regard to the relationship of the hemolytic streptococcus to the etiology of rheumatic fever, the Army Air Forces have placed such emphasis on that because it offers one positive approach to the problem. Obviously it is much easier to do something about the hemolytic streptococcus than it is about the genetic background of individuals in high incidence areas of rheumatic fever.

Dr. Caroline Bedell Thomas, Baltimore: I think Dr. Dwan and Dr. Gibson will agree that it is difficult to set up a valid experiment when working with a small group of rheumatic patients. Dr. Wilson rightly assumes that the alternate case method is best when working with large groups. We divided the control and treated groups on the basis of age and previous numbers of rheumatic recrudescences so that they would roughly approximate each other. Dr. Kuttner's study at Irvington House, to which Dr. Wilson referred, certainly is the best clinical civilian study on this subject. She divided 108 children into two groups of 54 which were closely intermingled. One group was given sulfonamide prophylaxis and the other was not. Among the sulfonamide treated series, 1 developed streptococcic infection and none developed rheumatic fever. Among the controls, 37 developed streptococcic infection and 14 developed rheumatic recrudescences. These results are significant and clearcut. In every such study carried out under any

circumstances, the incidence of rheumatic fever has decreased in the treated series. The studies which the armed forces are making will result in a more statistically valid series of controls than we have heretofore had. Dr. Jones, I have carefully read the original reports of the United States Navy, and the statements which I made today were based on the report of one of the largest stations, in which the controls were carried out company by company. Answering Dr. Gibson's question whether any deaths from rheumatic fever have occurred during sulfonamide therapy, 3 of the children studied in the Bellevue clinic died of advanced heart disease while receiving prophylaxis. Dr. Dodge always considered that they were given sulfonamides in a very advanced stage of the disease; whether or not there was progressive activity at the time sulfonamides were started is questionable. The patients were afebrile but had Aschoff bodies in the myocardium at autopsy. In answer to Dr. Keith, salicylates should be withdrawn during convalescence to be sure the rheumatic process has fully subsided. Later, when the condition of the patient is fully quiescent, if there is any virture in giving salicylates together with sulfonamides I see nothing against it, although I have had no experience in that problem.

Clinical Notes, Suggestions and New Instruments

PERFORATION OF THE INTESTINE DUE TO TYPHOID

CAPTAIN AARON A. DUBROW
MEDICAL CORPS, ARMY OF THE UNITED STATES

A Negro soldier aged 25 was admitted to a battalion medical regiment hospital on Oct. 25, 1942 complaining of chills and chilly sensations, headache, abdominal pain, diarrhea alternating with constipation, nausea and vomiting, backache and general malaise. Abdominal pain was generalized. Headache was supraorbital and very severe. The patient stated that about ten days previously he had experienced an episode of diarrhea which was followed by an episode of constipation. At the time of admission he was again having a diarrhea, averaging four to eight watery stools each day, associated with some tenesmus. He denied the presence of bloody or tarry stools. He stated that he had had very little appetite the previous two weeks and on several occasions he had episodes of nausea and vomiting. He seemed to tire easily on the slightest exertion, always seeming to be fatigued, and had experienced insomnia and restlessness.

The family history was essentially negative. The past history was also negative, the patient stating that he had always been in good health. His army immunization record showed that he had received all the required vaccinations and immunizations, including typhoid, smallpox and tetanus.

The patient at the time of admission appeared moderately ill; he was well developed, and was ambulatory. He was well oriented and cooperative. The temperature was 104 F. by mouth, pulse rate 88 and respiratory rate 22 per minute. The skin was hot and dry, and there was no evidence of any rashes or skin eruptions. The pupils were equal and reacted well to light and in accommodation. There was definite conjunctival injection but no icteric discoloration. The ears and nose were normal. The tongue was coated and thick, and there was a very foul odor from the mouth. The teeth were in fairly good condition. The chest was clear on inspection, auscultation and percussion. On examination of the circulatory system the heart sounds were of good quality; no murmurs were elicited. The blood pressure was 114/80.

The abdomen was somewhat distended and tympanitic. There was generalized tenderness with some increased tenderness in the right lower quadrant. No masses or fluid wave were present. There was some tenderness in the splenic area, but the spleen was only questionably palpable.

The extremities were normal. On neurologic examination the reflexes were found to be somewhat hyperactive but were otherwise normal.

The laboratory findings at the time of admission revealed a white blood cell count of 3,500 with 60 per cent polymorphonuclear leukocytes and 40 per cent lymphocytes. The urinalysis revealed the presence of some albumin, but the microscopic examination was negative.

The patient's stay in the hospital was rather stormy. His temperature rose daily to 104-105 F. with no remissions to normal, the lowest temperature being 101 F. The pulse rate ranged from 80 to 100 beats per minute and the blood pressure ranged from 100-110 systolic to 60-80 diastolic. The chest was normal at various examinations except for occasional rales at the bases. Abdominal pain and distention continued. The tenderness continued to be generalized, although there was usually some increased tenderness in the right lower quadrant. The patient became very apprehensive. He had occasional periods when he appeared to be somewhat disoriented and confused. Anorexia became even more evident. In short, he presented the picture of an acutely ill patient who was showing no progress.

Because of the limited laboratory facilities, no extensive laboratory work could be done in this forward area. His blood picture continued to show a leukopenia, the white blood cell count dropping as low as 2,000 with 50 to 55 per cent lymphocytes. The urinary picture remained essentially the same, although he began to show positive tests for varying amounts of acetone and diacetic acid. A satisfactory stool examination could not be done.

The treatment was essentially symptomatic and palliative. Sulfaguanidine had no appreciable effect. However, the diarrhea subsided, to be followed by a tendency to constipation. Quinine therapy also had no effect.

Fig. 1.—Section showing one of the ulcers with pronounced lymphocytic infiltration. This photomicrograph was taken through the eyepiece of the microscope.

On November 2 the patient suddenly began to have very severe abdominal pain. On examination shortly after he appeared acutely ill, with hippocratic facies; he lay in bed with his knees drawn up. He was obviously in shock and appeared to be very disoriented. The temperature had dropped to 97 F. but soon began to go up again. The pulse was rapid and thready. The respirations were shallow and increased in rate. The abdomen was decidedly rigid and with extreme generalized tenderness. At this time the patient was considered to have an acute condition of the abdomen possibly due to typhoid or one of the dysentery group of organisms.

He was given 1,000 cc. of 10 per cent dextrose in isotonic solution of sodium chloride preoperatively in an attempt to combat shock. A laparotomy was performed through a low midline incision, ether being used by the open method as the anesthesia. When the peritoneal cavity was opened free fluid of a serosanguineous nature as well as a pronounced injection of both the small and the large intestine were observed. This injection became increased as the terminal ileum was approached. The terminal ileum showed the presence of four perforations ranging from ½ to 1½ inches in diameter. The last perforation was about 1 inch from the ileocecal valve. About 10 inches of the ileum was resected. Because of the patient's poor condition it was thought inadvisable to perform any type of anastomosis at this time. A double barreled ileostomy was performed, a modified Mikulicz technic being used. Five grams of sulfanilamide powder was instilled intraperitoneally. The abdomen was closed tightly, no drains being used. The patient received plasma and fluids intravenously during and after the operation.

For the following three days he received 4,000 to 5,000 cc. of fluids intravenously. He began to show slow but progressive improvement. The ileostomy functioned well. His temperature dropped considerably, ranging in the vicinity of 101 F. Owing to the inadequacy of proper nursing care, evacuation to more suitable surroundings was considered advisable. On the fourth postoperative day he was evacuated to a rear zone by plane.

Blood cultures, Widal tests and other laboratory procedures could not be done in this locality. However, various cultures and blood specimens were sent to laboratories in less forward zones. A Widal test taken on the day of operation was negative. However, a Widal test taken three days later was positive in high dilutions. A blood culture was positive for Eberthella typhosa. A cultured specimen as well as a smear of the ulcers revealed a pure culture of Eberthella typhosa. Urinary specimens were not sent for bacterial examination.

The pathologic examination of the microscopic section revealed that it was of a segment of small intestine showing one margin of a deep perforated ulcer. The mucosa and ulcer margin was sharply demarcated. The ulceration extended through all coats of the intestine. The base of the ulcer consisted of necrotic tissue, débris, fibrin and neutrophils.

The submucosa showed hyperplastic lymphoid tissue consisting mainly of lymphocytes. Also present were many plasma cells, many large mononuclear cells and scattered eosinophils. The mononuclears showed pronounced phagocytosis of tissue débris, cells and erythrocytes. A few cells were in mitosis. The muscularis was edematous and was infiltrated with lymphocytes, eosinophils, large mononuclear cells and a few neutrophils. On the serosal surface there was evidence of peritonitis. The surface was covered with an exudate consisting of fibrin, neutrophils and a few mononuclear cells.

The microscopic appearance of this lesion was compatible with the diagnosis of perforated typhoid ulcer of the intestine with peritonitis.

The differential diagnosis prior to surgery was very difficult. At the time of his admission, dengue fever and bacillary dysentery were very prevalent in the immediate and surrounding areas. The confusing abdominal picture frequently presented by other fevers and sometimes by dengue fever could not be ruled out prior to surgical intervention. Amebic dysentery was also not too common. Botulism was also to be considered, owing to the large amount of canned foods being used at that time. The acute and sometimes severe gastroenteritis and enterocolitis of undetermined etiology that were not too infrequently

Fig. 2.—Section showing the base of the ulcer with débris, necrotic tissue, fibrin and neutrophils. There is also present the pronounced lymphocytic infiltration of the submucosa as well as many plasma and mononuclear cells.

seen were also considered. No cases of typhoid or paratyphoid had been reported. There were no other similar cases in his organization or in any organization in the immediate area. As a result of all this a truly complicated picture presented itself, and up until actual surgical operation no accurate diagnosis could be made. The entire picture was made doubly difficult by the limited laboratory facilities.

The fact that the patient had received his three immunizing injections of typhoid vaccine also helped to complicate the case. Apparently the immunity accorded by the vaccines was only temporary or he had not been able to build up sufficient antibodies to afford him sufficient immunity. Had the infectious organisms been of a very virulent strain, it seemed probable

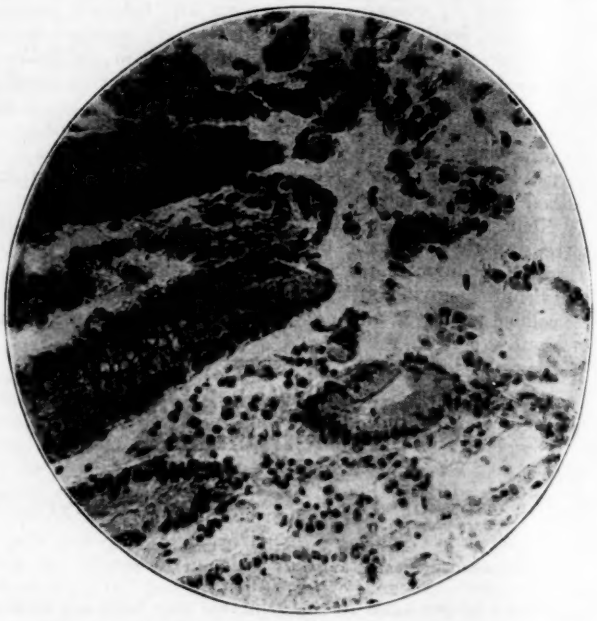


Fig. 3.—Section showing the débris, necrotic tissue, fibrin and neutrophils at the base of the ulcer.

that other members of the same unit would also have contracted the disease. All the soldiers had been using the same water sources, and no fresh milk or other fresh dairy products were available in this area. The water had been chlorinated in the usual army manner by means of a Lyster bag.

The follow-up of this case was rather interesting. Convalescence was further complicated by a bronchopneumonia. This was satisfactorily treated. The patient was transferred again to a general hospital, where an operation for a secondary closure and anastomosis was subsequently performed. As far as is known now the patient has made a satisfactory recovery.

PENICILLIN TREATMENT OF A CASE OF TULAREMIA WITHOUT EFFECT

LIEUTENANT COLONEL ALLEN I. JOSEY
MEDICAL CORPS, ARMY OF THE UNITED STATES

This case of apparently tick borne, pneumonic type of tularemia is reported with comments as to the effect of treatment with penicillin and sulfadiazine.

A soldier aged 28 years was admitted to O'Reilly General Hospital June 5, 1944, complaining of headache, malaise and fever of four days' duration. The patient's past history was entirely noncontributory. For two weeks prior to admission he had spent his furlough time on a farm in southeastern Missouri. There had been no contact with any wild animals, but he was bitten a number of times by ticks during the week prior to the onset of his present illness. On June 2 he first noticed generalized headache, weakness, chilly sensations and fever. During the following three days these persisted and he developed a slight amount of mucoid, blood tinged discharge from the nasopharynx, a slight cough and generalized aching in the chest.

On examination he appeared acutely ill, his temperature was 105 F., the pulse rate was 108 and the respiratory rate was 26.

From the Medical Service, O'Reilly General Hospital.

The laboratory reports included in this communication were done in the Laboratory Service, O'Reilly General Hospital, Springfield, Mo., and in the Laboratory of the Seventh Service Command.

There was a superficial ulceration about 0.25 cm. in diameter just above the inner portion of the right clavicle. On the anterior pillar of the right tonsil there was a similar ulcer. Neither of these ulcers was indurated or painful and there was no associated lymph gland enlargement. Over a small area at the left lung base there were a moderate number of fine and medium rales without any change in breath sounds or percussion note.

During the next twenty-two days the condition of the patient was febrile, with temperature as high as 104.5 F., which then fell by lysis during the next four days to normal. During the first three weeks he remained acutely ill. The bloody mucoid discharge from the nasopharynx subsided within seventy-two hours. Dyspnea was persistent for about two weeks, but there was only slight cough and very little mucoid expectoration. The two small superficial ulcers remained unchanged for about ten days and then healed spontaneously. At no time were there any palpably enlarged lymph glands. There was a spread of the physical signs compatible with bronchopneumonia over the entire left lower lobe and part of the right lower lobe of the lungs. On the ninth day of the disease a pleural friction developed at the left lung base followed by an accumulation of a moderate amount of fluid in the left pleural space, which was tapped on the eleventh and sixteenth days with aspiration of 60 and 350 cc. of serosanguineous fluid. As the temperature returned to a normal level there was symptomatic improvement, and by the thirtieth day of the disease the patient was gaining strength rapidly and the only apparent residual of the disease was evidence of moderate pleuritis at the left base.

The urine contained a slight amount of albumin and a few granular casts during the febrile period. There was no anemia of note at any time. The white blood cell count was 8,400 on admission and varied from 5,300 to 11,400, with a moderate increase in neutrophils during the febrile period. Repeated blood cultures were negative. Agglutination against Pasteurella tularensis was negative on the tenth day of the disease, but it became positive 1 : 40 on the eleventh day and positive 1 : 2,560 by the twenty-third day. It is of interest that there was an associated rise in his agglutination to Brucella abortus to 1 : 320. Fluid removed by thoracentesis on the eleventh day of the disease was injected into the peritoneal cavity of a rabbit. This rabbit died four days later and showed evidence of splenic enlargement with areas of focal necrosis. Material obtained from the spleen of the animal was injected into a second rabbit, which died five days later. Pasteurella tularensis was cultured from the spleen of the second rabbit, and microscopic sections of the liver and spleen of the same rabbit showed findings typical of tularemia. X-ray examinations of the chest substantiated the physical findings of the pneumonia and serofibrinous pleurisy.

Effective treatment was symptomatic and supportive in nature. The patient had been given sulfonamide by his local physician before admission to the hospital. Owing to the obscurity of the diagnosis sulfadiazine, which had been given for thirty-six hours following admission, was discontinued. On the eighth day of the disease penicillin was begun in doses of 20,000 Oxford units intramuscularly every three hours. This was continued for thirteen days with a total dosage of 1,900,000 Oxford units. Shortly thereafter the temperature curve, which had been spiked in character, became more level but the mean elevation was not reduced. There was no effect noted on the symptomatology or physical signs. On the ninth day of the disease it was decided to reinstitute sulfadiazine therapy, and sufficient drug was administered to maintain a blood level between 5 and 8 mg. per hundred cubic centimeters in the circulating blood. This also was apparently ineffectual and was discontinued on the twenty-first day.

SUMMARY AND CONCLUSIONS

A case of apparently tick borne pneumonic type tularemia ran the usual course of the disease, with fever for twenty-six days. The course of the disease was not affected by the intramuscular injection of 1,900,000 Oxford units of penicillin over a period of the eighth to the twenty-first day of the disease. Administration of sulfadiazine from the ninth to the twenty-second day of the disease was also ineffectual.

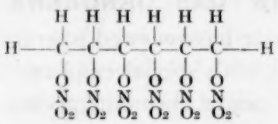
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN E. SMITH, M.D., *Secretary.*

MANNITOL HEXANITRATE.—Mannitol Nitrate.—Nitromannite.—$C_6H_8O_{18}N_6$ M. W. 452.17.—An explosive compound formed by the nitration of mannitol, a sugar alcohol. Its stability at ordinary temperatures is such that it may be used commercially but it is distinctly less stable than nitroglycerin at 75 C. Its use for pharmaceutical preparations is only in admixture with carbohydrate substances in dilutions corresponding to 1 part of mannitol hexanitrate to 9 or more parts of carbohydrate. In such dilutions mannitol hexanitrate is nonexplosive. Mannitol hexanitrate has the following structural formula:



Actions and Uses.—Mannitol hexanitrate exerts the vasodilator action of the nitrite ion (NO_2), causing a relatively persistent relaxation of smooth muscle, especially that of the smaller blood vessels. This relaxation causes a fall in blood pressure, occurring within fifteen to thirty minutes and lasting four to six hours. It also relaxes the coronary vessels and frequently provides relief from the pain of angina pectoris, although too frequent dosage may cause such a fall in blood pressure that the blood flow continues to be inadequate in spite of the vasodilatation. It has no direct effect on the myocardium.

Toxic effects include the formation of methemoglobin (which should constitute a warning concerning the use of nitrites by anemic persons), rise in intraocular tension, headache, increase in intracranial pressure and cardiovascular collapse. Treatment of severe untoward effects includes cessation of therapy with the drug, administration of oxygen, transfusions for shock, removal of drug from the stomach and other supportive measures such as lowering of the head and elevation of the limbs. Vasopressor agents should not be used in the presence of cardiovascular collapse, as they may aggravate the condition.

Dosage.—Mannitol hexanitrate may be administered in 15 to 30 mg. doses at intervals of four to six hours. Occasionally this dose may be exceeded, but careful watch of the blood pressure and the patient should be kept at all times so that the development of undesirable side effects and the patient's tolerance may be noted. The dosage should be kept at a minimum compatible with satisfactory results. Patients with extensive arteriosclerosis may not present reductions in blood pressure and, as in other instances, if no reduction occurs, medication with mannitol hexanitrate should be discontinued.

Tests and Standards.—

Mannitol hexanitrate tablets are partially soluble in alcohol and in ether (*mannitol hexanitrate*) and are partially soluble in water (*lactose*).

To a powdered tablet of mannitol hexanitrate add one drop of diphenylamine test solution: a characteristic blue color is formed.

The residue obtained in the assay given below melts between 106 and 108 C. *(Caution: The mannitol hexanitrate used in this test may explode on percussion. The operator must be protected by a glass screen while determining the melting point.)* It is insoluble in water and soluble in alcohol and in ether. It may be recrystallized from hot alcohol in the form of characteristic long needles in regular clusters.

Transfer an accurately weighed portion of powdered tablets, containing about 0.25 Gm. of mannitol hexanitrate, to a glass stoppered Erlenmeyer flask and extract the powder with 25 cc. of ether; decant the extract through a dry filter paper into a tared dish and repeat the extraction five times; evaporate the combined filtrates to 3 cc. at a temperature not exceeding 35 C. and allow the remaining solution to evaporate spontaneously. Dry the residue over calcium chloride in a vacuum desiccator for eight hours and weigh the mannitol hexanitrate: the amount of mannitol hexanitrate found corresponds to not less than 93 per cent nor more than 107 per cent of the labeled amount.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Tablets Mannitol Nitrate: 16 mg. and 32 mg. Each tablet contains not less than 93 nor more than 107 per cent of the labeled amount of mannitol hexanitrate and also contains at least 9 parts of carbohydrate by weight.

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SATURDAY, OCTOBER 21, 1944

SULFONAMIDE AND PENICILLIN THERAPY IN GAS GANGRENE

The present war has renewed interest in the therapy of gas gangrene, with special emphasis on the possible efficiency of the newer chemotherapeutic agents. Bliss and her associates [1] therefore inoculated mice intramuscularly with the specific organism and tested the therapeutic value of various sulfonamides given orally or by means of local injection. None of the sulfonamides showed a high degree of activity in combating experimental Clostridium welchi infection, but better results were obtained with local injections than with oral administration. Sewell and his associates [2] made similar experiments on dogs and were also unable to abort gas gangrene with sulfonamides but were able to prolong life.

About the same time McIntosh and Selbie [3] treated 24 mice within three hours after experimental infection with Clostridium welchi by local injection of 34 Oxford units of penicillin and reported 100 per cent survival. Following this encouraging lead, Hac [4] and her associates of the Department of Obstetrics, University of Chicago School of Medicine, made detailed therapeutic assays of tyrothricin, zinc peroxide, sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine and penicillin, tested either alone or in combination. Mice were inoculated intramuscularly with 0.25 cc. of a 1:4 dilution of an eighteen hour brain-broth culture of highly virulent Clostridium welchi. With this dose most of the untreated mice showed evidence of a generalized reaction (chills, hematuria and so on) within six to eighteen hours, death occurring in about twenty-four hours in 85 per cent of the cases. Necropsy revealed an edematous hemorrhagic area frequently extending upward to the axilla and downward to involve the entire leg. In practically all animals that survived, an extensive lesion which tended to slough persisted at the site of inoculation.

In the therapeutic test 0.25 cc. of a solution of the chemotherapeutic agent was injected either subcutaneously into the subinguinal region of the infected leg or into the opposite leg. The injection was made at varying times, such as half an hour before inoculation, at the time of inoculation or from one to three hours afterward. Of 404 untreated controls 85 per cent developed hematuria and 365 died, a survival rate of 9.7 per cent. In the parallel prophylactic test (therapy given half an hour before inoculation) the survival rate was increased to 96.6 per cent by a single 50 mg. dose of sulfadiazine and to 88 per cent by a single injection of 250 Oxford units of penicillin. Sulfadiazine was thus apparently the prophylactic agent of choice.

When the therapy was delayed till one hour after inoculation, however, the condition was reversed. The survival rate was 92 per cent with 250 Oxford units of penicillin, as contrasted with only 48.3 per cent survival with 50 mg. of sulfadiazine and 20 per cent survival with 50 mg. of sulfathiazole. When the therapy was delayed till three hours after inoculation, the survival rates were reduced to 38 per cent for penicillin and to an average of 10 per cent for the two sulfonamides. Within the limits of the experimental error, the two sulfonamides were useless in this delayed therapy, the control survival being 9.7 per cent. As a result of immediate penicillin therapy the hematuria rate was reduced to zero. In penicillin therapy delayed for one hour the hematuria rate was 42 per cent, increasing to 60 per cent if delayed two hours and to 85 per cent if delayed three hours.

Hac treated groups of mice with a single subcutaneous injection, using varying doses of penicillin given at the time of inoculation. The 9.7 per cent survival rate in untreated controls was increased to 54 per cent survival as a result of 5 Oxford units of penicillin, 73 per cent survival with 15 Oxford units and a maximum of 98 per cent with 500 Oxford units. The smallest dose of penicillin (5 Oxford units) was thus superior to the optimal dose of sulfadiazine or sulfathiazole. This superiority was shown in other ways. When treated animals died, the average period of survival was longer with penicillin than with the two sulfonamides. Penicillin was also much more effective than sulfadiazine or sulfathiazole in minimizing toxemia and tissue damage and in accelerating local tissue repair. After successful penicillin therapy the lesion at the site of the inoculation is usually healed in ten to eighteen days, as compared with twenty-two to thirty-six days after successful sulfonamide therapy. With small doses of penicillin, subcutaneous injection in the infected leg gives better results than injection into the

1. Bliss, Eleanor A.; Long, Perrin H., and Smith, Dorothy G.: Chemotherapy of Experimental Gas Gangrene and Tetanus Infections in Mice, War Med. **1**: 799 (Nov.) 1941.

2. Sewell, R. L.; Dowdy, A. H., and Vincent, J. G.: Chemotherapy and Roentgen Radiation in Clostridium Welchi Infections, Surg., Gynec. & Obst. **74**: 361 (Feb., number 2 A) 1942.

3. McIntosh, James, and Selbie, F. R.: Zinc Peroxide, Proflavine and Penicillin in Experimental Clostridium Welchi Infections, Lancet **2**: 750 (Dec. 26) 1942.

4. Hac, Lucile R.: Experimental Clostridium Welchi Infection, J. Infect. Dis. **74**: 164 (March-April) 1944.

opposite leg. With large doses of penicillin, however, local and distant subcutaneous injections are equally effective.

Encouraging as these results may be, Hac asserts that neither sulfonamides nor penicillin given alone or in combination will prove to be clinically effective in human cases unless combined with "adequate surgical procedure."

REGIONAL ILEITIS

Regional ileitis has been receiving more attention ever since Crohn and his associates [1] first described it in 1932. In a recent system of gastroenterology by Bockus,[2] the whole chapter is brought up to date; aside from correlated statistical data, comparatively little has been added to the original description of the disease.

Pathologists agree that the distinguishing features are: 1. Hypertrophy and thickening of the bowel wall, usually confined to some one localized stretch of the mesenteric small intestine, most frequently the terminal ileum, and varying in extent from a few inches to several feet. A bizarre feature of the disease is its occasional tendency to attack more than one segment of the bowel, leaving the intervening segments intact. The process may involve the colon down to the sigmoid. 2. Resultant narrowing of the bowel lumen. 3. Hyperplasia of the mucosa, frequently with ulceration. 4. Perforation with localized or general peritoneal involvement and the establishment of internal or external fistulas. This train of events is usually preceded by hyperplasia of lymphatic tissue and an obstructive lymphedema. Microscopically the appearance is highly mimetic of tuberculosis; but all attempts to demonstrate tubercle bacilli or any other causative organism, including the virus of lymphogranuloma venereum, have failed. The counterpart of the disease has not been observed in animals.

The diagnosis rests on symptoms so complex and varied as to create an almost invariable hazard. Crohn's original classification of symptoms is valid today, and we shall always be on safer ground if we bear in mind that the course of the disease may follow any of four patterns: (1) that of acute intra-abdominal disease, resembling most frequently acute appendicitis; (2) that of ileocolitic diarrheal disease; (3) that of chronic intestinal obstruction with supervening acute obstruction; (4) that of fistulous (external or internal) formation. Differential diagnosis demands consideration of acute appendicitis, bacillary dysentery, acute perforative peritonitis, intestinal obstruction and cancer of the bowel.

Treatment is usually surgical. If the patient is seen in the acute stage and the abdomen is mistakenly opened for appendicitis, the consensus seems to be that the time-old maxim of "let a sleeping dog lie" should be followed and the abdomen closed without drainage. In the chronic cases the methods of treatment are either resection of the diseased segment of bowel or of sidetracking it (by ileocolostomy or by some similar procedure). Search should always be made for so-called skip areas of bowel, distant from the region under immediate surgical attack; but even if these are found and cared for adequately there are, unfortunately, an appreciable number of postoperative recurrences. Since the etiology is not known, methods of prevention are not available. In those cases in which it may be suitable to apply purely medical treatment, this should follow, in general, the lines established for the treatment of ileocolitis.

Such are the short and simple annals of a perplexingly interesting and, on occasion, a fulminatingly dangerous disease. Before 1932 ileitis was unknown as a distinct entity, yet within the following seven years more than 500 cases had been reported. This reminds us that appendicitis, for all practical purposes, was unknown until after Fitz's work in 1886 and that duodenal ulcer likewise did not appear on the medico-surgical stage until the early nineteen hundreds. Curiosity is no less aroused by the present day novelty of intervertebral disk displacement. How long will regional enteritis baffle the search for its cause?

1. Crohn, B. B.; Ginzberg, L., and Oppenheimer, G. D.: Regional Ileitis, J. A. M. A. **99**: 1323 (Oct. 15) 1932.
2. Bockus, H. L.: Gastro-Enterology, Philadelphia, W. B. Saunders Company, 1944, vol. 2, p. 158.

FOUR YEARS OF WAR SURGERY

Some people, including some physicians, hold the notion that the calamity of war is offset, at least partly, by war's contribution to the advancement of medical science in general and of surgery in particular. Improvements in the medical service to our wounded men in the present war are due chiefly to the principle of advanced surgical units, to more rapid ground and aerial transportation, to the use of sulfonamides, to more liberal recourse to blood and plasma transfusions and to plaster immobilization of soft tissue wounds. Major General Mitchiner [1] asserts that this improvement is not as great as one would like to believe, especially in the prevention and control of sepsis. Mitchiner says that "the self-congratulatory coma into which some of our 'specialist' colleagues have allowed themselves to lapse is almost without justification." He feels that the slightly wounded should be given precedence of treatment.

These cases constitute 60 to 70 per cent of war wounds; if promptly and adequately treated near the battle front, most of these men can be returned to the front line. In World War I a large number of wounds

1. Mitchiner, Philip H.: Thoughts on Four Years of War Surgery —1939 to 1943, Brit. M. J. **2**: 37 (July 8) 1944.

were from bullets, whereas those seen in the present war are mainly lacerated wounds of a severe type, the mortality from which is much higher. In the bombing casualties of aerial warfare some 60 per cent of the patients die either as a result of the actual injury plus blast or soon after from hemorrhage and shock due to the severity of the wound inflicted.

While admitting the great part played by the Blood Transfusion Service, Lord Mitchiner feels that there is a tendency to overevaluate blood transfusion to the detriment of older and simpler methods of resuscitation and wound treatment such as hot sweet fluids by mouth, warmth and morphine. Furthermore, the risk of septic infection from administering blood transfusion on the field of battle and in the street during an air raid is considerable. Blood or serum should not be given intravenously farther forward than the advanced dressing station on the field of battle, the sick bay when this is functioning adequately in a ship, and the first aid post during an air raid. He also feels that there is a tendency to give large quantities of blood unnecessarily and wastefully. Secondary suture of war wounds is safer and is to be preferred to primary suture. Mitchiner stresses that these principles are not new, that all emanated from the practice of surgery of the war of 1914 to 1918 and from earlier wars. Even the closed plaster technic, for which credit is given to Trueta, was practiced in the Crimean War by Pirogoff.

Infection of wounds has been much modified and the danger greatly reduced by the use of sulfonamides. However, Mitchiner warns again that excessive and indiscriminate use of these drugs is not without risk. Many patients show an idiosyncrasy to drugs of this group, while certain organisms react only to certain types. He believes that the treatment should be carried out in close cooperation with a bacteriologist. Any dose over 15 Gm. applied externally may produce toxic and even fatal results even in cases in which the fluid intake can be kept up by both intravenous and oral administration for the three days subsequent to the use of a sulfonamide. Sulfonamides, therefore, are not a panacea for all infections but may actually be deleterious and even dangerous. Their use, as a general rule, should be discontinued promptly in cases which show no constitutional improvement or fall of temperature in forty-eight hours. Penicillin, on the other hand, is not toxic and far surpasses all other antiseptics. Its action is most dramatic on the staphylococcus and gonococcus. Its use, however, may entail a drastic revision of surgery of wounds, for apparently it acts best in the presence of pus and in cases in which it is applied locally. Lord Mitchiner concludes that the surgical procedure has not altered greatly since World War I, although the type of wound has altered somewhat owing to the use of more lethal explosives and missiles.

This realistic evaluation by a competent authority is not to be construed as a confession of disappointment or failure but rather as a timely warning against the dangers of complacency and wishful thinking.

Current Comment

EFFECT OF TRAVEL ON THE INCIDENCE OF ABORTION

Diddle [1] reports a study on the incidence of abortion among a group of pregnant women who journeyed and a group who maintained a sedentary existence during the period of gestation. The particular naval hospital and dispensary from which the data were collected served all obstetric dependents of the Navy, Marine Corps, Coast Guards and Army personnel. The geographic position of the clinic was particularly favorable to this type of study. The area concerned is an island 127 miles away from the mainland of the Continental United States and is connected with the latter by means of a rough asphalt and coral highway and a system of bridges. The road in places is corrugated with transverse humps. In order to commute to and from the nearest railroad, 170 miles away, it was necessary for all women to go by bus or car over this course. For a period of observation limited to sixteen weeks there were 289 women who journeyed and 467 who did not. A smaller group, in which 200 women did not journey and 110 did, permitted observation month by month for a longer period. Of the 289 travelers who toured before the end of the fourth month 16, or 5.6 per cent, had untimely births as contrasted to 84, or 17.9 per cent, occurring among the control or sedentary series. Based on the 179 protocols where the distances covered were known definitely, 46 (25.7 per cent) were multigravidas and 37 (20.6 per cent) parous. A careful analysis of all the factors involved suggested to the author that neither the distances covered and the method of travel nor the time of the month at which a journey was taken revealed any significant differences in the incidence of abortion. The results of these observations, although involving a small group, suggest that travel by car or bus over the rough stretch of highway covering the keys and over modern roads and by train in the states did not increase the incidence of abortions among travelers as opposed to nonjourneying women. Transportation alone probably did not predispose to abortion, except in 1 case in the series: the woman had ridden a motorcycle a few hours previously. Journeying perhaps had facilitated an interruption of gestation where intrinsic and extrinsic factors were already in action. The principal argument against traveling is that it entails the possibility that an expectant mother may need medical care wherever trouble may arise and with such resources as are present.

1. Diddle, A. W.: The Effect of Travel on the Incidence of Abortion, Am. J. Obst. & Gynec. **48**: 354 (Sept.) 1944.

MEDICINE AND THE WAR

ARMY

BRIG. GEN. LEON A. FOX RECEIVES TYPHUS COMMISSION MEDAL

Brig. Gen. Leon A. Fox has been awarded the Typhus Commission Medal for his work as director and field director of the United States of America Typhus Commission in the Middle East and Mediterranean areas, and specifically for his direction of the Typhus Control Project of Naples in December 1943, which brought that epidemic under control within a month. The citation accompanying the award reads "For exceptionally meritorious service rendered first as director and later as field director of the United States of America Typhus Commission. In charge of the commission's activities in the Middle East and North Africa since March 1943, General Fox increased the extent and value of investigations and control of typhus fever in Egypt and in other Mediterranean countries. In positions of high responsibility his opinion and counsel had important influence on both medical affairs and international relationships. On missions to London he further cemented and strengthened British and American effort and policy for operation with civil affairs in this country and abroad. In December 1943 General Fox was placed in charge of the campaign against the outbreak of typhus fever at Naples, at a time when the disease had reached epidemic proportions and was a threat to military operations. Securing full cooperation from military and civilian agencies, he organized a vigorous attack on the disease, employing all the modern principles and methods for combating typhus. So effective was the work done under General Fox that the epidemic was brought under control within a month. The achievement in controlling this epidemic of typhus at Naples and in southern Italy ranks as one of the greatest triumphs of modern preventive medicine." Dr. Fox graduated from the University of Cincinnati College of Medicine in 1912 and has been in the service since June 1917.

THREE EGYPTIAN HEALTH OFFICIALS HONORED FOR TYPHUS WORK

The War Department announced recently the award of the United States of America Typhus Commission Medal to three Egyptian health officials for their cooperation with our scientists in the study of typhus fever. The citation of Dr. Ali Towfik Shousha, under secretary of state for health of the Egyptian government, reads:

"For meritorious service in connection with the work of the United States of America Typhus Commission. From the time of the arrival of the commission's group in Cairo early in 1943, Dr. Shousha has taken great personal interest in the activities of the commission. He has entered wholeheartedly into the cooperative projects which have been established. Through his sound advice and administrative capacity he has furthered all the investigations and control work done by the commission in Egypt."

The following is the citation of Dr. Abdel Hamid Sadek, director of the section for epidemic diseases of the Egyptian government health department:

"For meritorious service in connection with the work of the United States of America Typhus Commission. By his interest and tireless efforts Dr. Sadek greatly facilitated the whole program of field investigations and the control of typhus fever in Egypt. From these activities, information and experience were gained for the improvement of epidemic typhus control in all areas."

The citation of Dr. Mahmoud Abou-Demerdash, director of the Egyptian government hospital for infectious diseases, is as follows:

"For meritorious service in connection with the work of the United States of America Typhus Commission. Through the interest and cooperation of Dr. Demerdash, wards and laboratory buildings were made available to the United States of America Typhus Commission at the Fever Hospital in Cairo in 1942. As the clinical and laboratory investigations increased with the encouragement and aid of Dr. Demerdash, improved facilities were provided at this hospital in 1944. Dr. Demerdash has taken great personal interest in the work of the members of the commission with patients suffering from typhus fever. He has given expert advice and training based on his experience with the disease and has materially aided the commission's study of typhus fever in Egypt."

LIMITED SERVICE OFFICERS EXAMINED FOR OVERSEAS DUTY

Because of the urgent need for Medical Corps officers for overseas assignment, a survey is being made of all those in the army service forces who are now on permanent limited service with a view to their possible reclassification. Many, it is felt, can be assigned to communication zone installations overseas, where they can perform duties similar to those in the zone of the interior. Medical Corps officers will not be considered disqualified for overseas service if they can be expected to render effective professional service without appreciable risk of aggravating physical defects or if they have histories of defects which are not demonstrable and have not resulted in hospitalization while in service.

ARMY'S RECONDITIONING PROGRAM MAY INFLUENCE CIVILIAN HOSPITALS

Major Henry B. Gwynn, of the Reconditioning Division of the Office of the Surgeon General, recently stated that the strides being made in the operation of the Army reconditioning program will probably lead to radical changes in the civilian hospital of the future. Civilian hospitals, capitalizing on the progress made by the Army's reconditioning program, will probably include motion picture theaters, gymnasiums, public address systems and areas for physical and occupational therapy in their buildings of tomorrow. Anticipating the objection of increased costs in such a program, it was pointed out that the Army is finding that hospitalization time is curtailed from 10 to 33⅓ per cent as a result of reconditioning. If this estimate holds true even to some extent in civilian practice, Major Gwynn stated, the lower incidence of complications and the shortened convalescence at home before resuming normal activities will more than pay the additional cost.

The prospects for the adoption of this reconditioning program by civilian hospitals will depend on public opinion and the attitude of the medical profession, Major Gwynn said, and ideas which have been in vogue for several hundred years will be changed only when the facts justify it.

FIVE HUNDRED MEN COMMENDED FOR PART IN TESTS OF NEW GAS OINTMENT

Five hundred officers and enlisted men were recently commended by the Chemical Warfare Service of the Army Service Forces for voluntarily exposing themselves to lethal gases in order to test a new anti-gas protective ointment. As a result of these tests, during which men entered gas filled chambers and contaminated areas, medical officers and research scientists have conclusive evidence that the M5 protective ointment, or "gasproof makeup kit," will be effective in the event that the enemy resorts to gas warfare. The commendation stated that the men "participated beyond the call to duty by subjecting themselves to pain, discomfort and possible permanent injury for the advancement of research in protection for our armed

forces." Among the volunteers were 40 soldiers of Japanese ancestry now serving with United States forces.

The men subjected to the gas chamber tests were protected by gas masks and liberal quantities of the new ointment. Others tested the substance by entering ground areas which had been contaminated with lethal agents. In order to minimize the danger to the personnel, tests were made only after exhaustive experiments with the ointment. None of the volunteers suffered any ill effects.

CIVILIAN NURSES NEEDED FOR ARMY HOSPITALS

Registered nurses who are professionally but not otherwise qualified for commissions in the Army Nurse Corps are needed for employment under Civil Service in army hospitals.

Registered nurses more than 45 years of age who are not physically qualified for commissions or whose home responsibilities prevent them from applying for commissions are eligible for these positions.

Urgent need for commissioned nurses in the overseas theaters, where their skill often means the difference between life and death for an American soldier, has resulted in a shortage of qualified nurses in hospitals in this country. Simultaneously, increased numbers of patients are being sent back to this country from the battle fronts.

Civilian nurses wishing to avail themselves of the opportunity for service in army hospitals may work in hospitals near their homes. They may live in government quarters or may reside at their homes, provided adequate transportation is available to and from work. Working hours for civilian nurses in army hospitals often are longer than the standard forty-eight hour week. The salary is $2,190 a year, on a forty-eight hour week basis, but, if circumstances require overtime employment, additional pay may be authorized.

Qualified nurses interested in this type of employment can get full information at the army hospitals nearest their homes. Employment will be completed through Civil Service channels.

SEVERAL HUNDRED DENTAL OFFICERS TO BE RELIEVED FROM ACTIVE DUTY

A recent announcement by the War Department stated that several hundred dental officers will be relieved from active duty with the Army shortly, permitting their return to private practice. The following priority is established for the release of officers in replacement pools or elsewhere whose services can be spared:

1. Officers not physically capable of doing a full day's duty operating at a dental chair.

2. Limited service officers requiring special consideration as to climate, diet or type of work or who are qualified for assignment in the United States only.

3. Officers whose relief from active duty can be accomplished under current War Department policies governing officer personnel generally.

4. Officers selected by the Surgeon General who can be released with least detriment to the service. This category will be used, after exhausting all others, to make up the number required to be released to reduce an existing surplus of dental officer personnel.

ARMY HOSPITALS MAY EMPLOY NURSES BEFORE COMMISSIONING

Graduates of the U. S. Cadet Nurse Corps who have taken their Senior Cadet period in army hospitals and who have applied for commissions in the Army Nurse Corps may be hired as civil service appointees by army hospitals subject to the law of the state in which each hospital is located. Appointments will not exceed six months' duration. This step has been taken because of the shortage of qualified nurses and of the delay in commissioning due to the fact that state board examinations, a prerequisite for a commission, are frequently not given for some time after the graduation date.

MAJOR TEGTMEYER NAMED MOST CITED DOCTOR

Major Charles E. Tegtmeyer, formerly of Hamilton, N. Y., five times decorated by the Army Medical Corps, has been named the most frequently cited former staff member of New York's voluntary hospitals. In nearly three years of service Dr. Tegtmeyer has been in the North African, Sicilian and Italian campaigns. Twice wounded in action, he is the recipient of the Purple Heart, Bronze Star, Silver Star, Legion of Merit and Distinguished Service Cross "for conspicuous gallantry in rescuing and saving the wounded." Dr. Tegtmeyer graduated from Columbia University College of Physicians and Surgeons, New York, in 1935.

FIRST PHYSICAL THERAPIST AWARDED LEGION OF MERIT

First Lieutenant Metta L. Baxter, PT, of Los Angeles, now stationed with the 21st General Hospital in Italy, is the first physical therapist to be awarded the Legion of Merit. Her citation reads "for exceptionally meritorious conduct in the performance of outstanding service." Lieutenant Baxter is a graduate of Kansas State College, Manhattan, and received her physical therapist certificate from the Army Medical Center, Washington, D. C.

CAPT. ROBERT E. WOLF MISSING IN ACTION

Capt. Robert E. Wolf, formerly of Shreveport, La., has been reported missing in action since August 10. Dr. Wolf has been a battalion surgeon and has been in the army for two years. He went overseas last October. Dr. Wolf graduated from the University of Arkansas School of Medicine, Little Rock, in 1940 and entered the service Aug. 22, 1942.

FLIGHT SURGEONS' ASSISTANTS

A class of seventeen flight surgeons' assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas, September 15. These men are trained as specialists in assisting flight surgeons in the selection, care and maintenance of the flier. Brig. Gen. Eugen G. Reinartz, U. S. Army, is commandant of the school.

ARMY AWARDS AND COMMENDATIONS

Major Albert J. Bajohr

The Bronze Star Medal was recently awarded to Major Albert J. Bajohr, formerly of Flushing, N. Y. His medal was won on Bougainville, where battle surgery was performed night and day in an underground hospital. Dr. Bajohr graduated from George Washington University School of Medicine, Washington, D. C., in 1933 and entered the service April 2, 1941.

Captain Vincent S. Cunningham

For his gallant conduct in combat at Humboldt Bay, Dutch New Guinea, Capt. Vincent S. Cunningham, formerly of Long Island, N. Y., was awarded the Silver Star. The citation accompanying the award read "As a result of enemy bombing an ammunition and supply dump was set afire. With utter disregard for his own personal safety, and constantly in danger of being hit by shrapnel from exploding ammunition, Captain Cunningham set up an aid station near the fire and labored all night and until the next afternoon taking care of and gathering all casualties that could be collected." Dr. Cunningham graduated from New York University College of Medicine in 1935 and entered the service in June 1942.

Captain Fred A. Dry

The Silver Star was recently awarded to Capt. Fred A. Dry, formerly of Allentown, Pa. His citation reads "During the initial days of combat, severe casualties were sustained from German fire. During this time Captain Dry worked incessantly

to ease the treatment and removal of the wounded. Refusing suggestions that he remove his first aid station to a place of safety, he performed his duties as close to the front lines as possible. On several occasions, although he had not slept for days and with utter disregard for his own safety, he evacuated wounded from exposed front line positions and entered dangerous areas rather than order his men into areas subjected to heavy enemy fire." Dr. Dry graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1941 and entered the service in July 1942.

Major Dalton C. Hartnett

The Legion of Merit was recently awarded to Major Dalton C. Hartnett. The citation accompanying the award reads "He performed outstanding services as Flight Surgeon, 3d Photographic Mapping Squadron, from Feb. 20, 1943 to March 28, 1944. During this period, while serving the squadron on three continents in zones ranging from the arctic circle to the tropic of Capricorn, he maintained the health of the command at a very high level. He planned and personally conducted courses of instruction for the prevention of disease and the preservation of health. His untiring vigilance, initiative and personal check of all individuals of the command, by day and by night, resulted in maintaining 98.3 per cent of the unit available for duty." Dr. Hartnett graduated from St. Louis University School of Medicine in 1940 and entered the service June 30, 1941.

Major Jay Paul Roller

The Oak Leaf Cluster to the Silver Star was recently awarded to Major Jay Paul Roller, formerly of Luckey, Ohio. The citation accompanying the award reads "In Sicily in August 1943 a part of the Regimental Communications Section was sent forward to establish an advance communications switch. The leading vehicles of the convoy were hit by enemy artillery fire and mines, killing four and severely wounding eight of the enlisted men riding in front vehicles. Major Roller was called and went forward to the area being subjected to heavy enemy artillery and mortar fire to administer medical aid to the eight wounded soldiers. During the course of this outstanding devotion to duty he lost several of his own medical personnel as the result of German S mines. Notwithstanding this he continued on to the completion of his tasks throughout the night. On this occasion and countless others he demonstrated such gallantry and disregard for self in the performance of hazardous missions that his courage and devotion to duty are a constant inspiration to the officers and men of his regiment." The citation accompanying the Silver Star award appeared in THE JOURNAL Dec. 4, 1943, page 908. Dr. Roller is a graduate of the University of Louisville School of Medicine, 1939. He entered the service Jan. 5, 1941.

Captain Byrne M. Daly

Capt. Byrne M. Daly, formerly of Jackson, Mich., was recently awarded the Bronze Star for "meritorious service in actual combat while serving with the third (Marine) division on the Fifth Army front in Italy." The citation which accompained the award read "Capt. Daly served as battalion surgeon without an officer assistant and was further handicapped throughout the campaign by a shortage of technicians and litter bearers as well as by cold, rainy weather and difficult mountainous terrain. Although ill, he refused to rest and continued to render invaluable service to his organization in the treatment and evacuation of many casualties. His accomplishments of difficult tasks was the result of his skill, initiative and devotion to duty." Dr. Daly was previously awarded the Purple Heart for wounds received in September 1943 during action at Salerno. He has been overseas since October 1942 and took part in the North African campaign as well as the Italian fighting. Dr. Daly graduated from Wayne University College of Medicine, Detroit, in 1942 and entered the service on July 1 of that year.

MISCELLANEOUS

THE RED CROSS HOME NURSING PROGRAM

Through its home nursing classes the Red Cross is attempting to develop self reliance in the homemaker in handling simple illnesses in the home and in understanding the need for expert medical and nursing assistance in cases of a more serious nature. The homemaker who has had only simple training in home nursing can help the doctor by learning to recognize early symptoms of illness, by observing and by recording for his information such details as the elevation of temperature, the appearance of a skin rash or the presence and intensity of pain. She learns to carry out his orders intelligently, how to keep the patient comfortable and clean, how to fill a hot water bottle and how to use it, how to give an enema, apply a compress, prepare a special diet and carry out communicable disease technic without time consuming questions. She learns to use the telephone intelligently, to report information clearly and calmly, to call as early in the day as possible so he can arrange his schedule of calls.

The Home Nursing course differs from the Volunteer Nurse's Aide course, which is designed to prepare women to assist professional nurses in caring for illness in hospitals, clinics and dispensaries. The course also should be distinguished from courses for "practical" nurses whose services are on a paid basis.

The standard Red Cross Home Nursing course is primarily a homemaker's course in simple nursing skills—intelligent homemaking applied to the care of the sick in the home and to family health. It gives information about a safe home environment, including the necessity for a pure and efficient water supply, safe milk and food, screening, ventilation and waste disposal. It inculcates an interest in the general public health and its inevitable relationship to the health of the home. It awakens responsibility for supporting the health officer in his efforts to safeguard the community.

The course is taught, usually on a volunteer basis, by nurses who meet Red Cross qualifications in both professional and general education. Although based on the Red Cross Home Nursing textbook, the content of the standard course is flexible and easily adapted to various age groups and their needs. The four types of courses designed for men, women and school age young people are:

First, the standard course, which requires not less than twenty-four hours for adult community groups. It includes the various phases of home nursing care. Second, a new streamlined course titled "Six Lessons in Care of the Sick," requiring twelve hours. It is designed for very busy, hard to reach adult groups and covers only the basic procedures in home nursing. Only instructors who have been authorized through a special training course may teach the Six Lessons. Third, the School course, for high school students. This may be given to school or out of school groups. Fourth, a College Course in Home Nursing and Family Health, now in preparation. It is intended for college students or others prepared to work on the college level.

Nurse-instructors spend approximately half of the class time on demonstrations and on supervising the practice of simple procedures, the other half on class discussions of problems. A small certificate, in recognition of the satisfactory completion of the course, is given. This does not imply that the holder is qualified to work for pay outside her home. However, in cases of emergency, or when the home nurse has time for volunteer service, she may assist community health agencies that need her and that are able to provide additional instruction and supervision.

The Red Cross Home Nursing textbook is the basic text for all adult courses and also serves as a permanent reference book in the home. The School Edition is used for the school course. The book has been translated into Spanish for the use of Spanish speaking people both in this country and in Latin America.

Home Nursing is one of the oldest programs of the American Red Cross. In 1908, three years after the Red Cross was chartered by Congress, the idea was originated for this plan of health education for the homes of the country. The program

has gathered impetus with the years. Particularly during the period of war and rehabilitation it is important because of the continued decrease in medical facilities available to civilians. The large number of wounded and disabled men being returned to this country will continue to make the problem acute. In addition, the mass grouping of people, the shifting of large populations because of employment reasons, may lead to an increase of communicable disease and to epidemics that will require the assistance of a citizenry trained in simple skills in caring for the sick in the home.

The Red Cross Home Nursing program is aiming to reach 3,000,000 persons estimated as the minimum additional number who should be trained in these simple skills. That figure has been based on a careful study of the estimated number who may be ill at given times in the homes of America. It has been found that it is usually women between the ages of 15 and 59 who normally care for the sick at home. Excluding those who already have been trained in home nursing, as nurse's aides or as professional nurses, it is estimated that the number still needed to insure safe nursing care would be at least 3,000,000.

How can the doctor help the Red Cross to reach the right persons? By asking who in his patient's family has had a home nursing course and by expressing appreciation to those who have demonstrated the value of the course; by directing prospective students to the Red Cross chapter for information about classes; by urging professional nurses—including housewives and others inactive in nursing—to arrange time for teaching classes (26,000 nurses are needed this year as instructors); by participating in the institutes for nurse-instructors and making recordings for local radio programs; by discussing home nursing at medical meetings, perhaps inviting a Red Cross Home Nursing committee member to explain the program; by speaking at closing class exercises (educational films on immunization or other appropriate subjects may be shown at such times); displaying the textbook, posters and dodgers on Red Cross Home Nursing in his office and including a dodger or statement on home nursing with his bills; urging the support of classes by various women's auxiliaries and other groups interested in health; calling attention to the Red Cross Nursing textbook as a valuable guide for the homemaker, even though she may not be able to attend the home nursing class.

The Red Cross is eager to help overworked doctors and professional nurses in these trying times by providing understanding people in the homes where sickness strikes. It asks the help of the medical profession in making a success of its home nursing program.

ARMY PSYCHIATRIST ASKS COOPERATION OF INDUSTRY

Lieut. Col. Malcolm J. Farrell, deputy director of the Neuropsychiatry Consultants Division of the Office of the Surgeon General, in speaking before the industrial relations conference of the American Management Association in New York City recently, stressed the need for industry to give employment whenever practicable to men disqualified for military service for psychiatric reasons. Dr. Farrell deplored the popular misunderstanding of psychiatric conditions and especially confusion over the meaning of the term psychoneurosis. Up to 80 per cent of the men who have become psychiatric casualties in combat, he said, have been cured when their cases were properly recognized and treated. Many others who cannot continue to perform some type of army duty and those who have been eliminated early in their training periods are capable of performing useful work as civilians.

FIRST NURSES TO SCHOOL OF MILITARY GOVERNMENT

Capt. Grace Alt, Fort Meade, Md., and Capt. Mildred Lucka, McCloskey General Hospital, Texas, both of the American Nurse Corps, have been selected as the first nurses to attend the School of Military Government at Charlottesville, Va., to qualify for assignment to the Civil Affairs Administration in the Far East.

MUSTERING-OUT PAYMENTS OF DISCHARGED ASTP STUDENTS

In reply to an inquiry concerning the discharge of premedical and medical students, the following was received from the Office of the Fiscal Director, September 21: "ASTP premedical and medical students, also predental and dental students, are not to be regarded as discharged because of importance to the national health safety or interest so as to preclude payment of mustering-out payment where otherwise qualified."

CIVILIAN INSECT CONTROL PROGRAMS AFTER WAR

At the end of the war the United States will be in an extremely favorable position to wage a major campaign against disease-carrying insects as a result of the tremendous effort the Army has made to defeat them in combat areas throughout the world. Efficient methods of insect control have been worked out and thousands of men have been trained in the technics developed. The men and the methods will be available for mosquito and other insect control programs, once peace and victory are achieved. They will make possible renewal of civilian efforts to eliminate the nuisance of the mosquito and at the same time guard against the diseases the mosquito is known to transmit, such as malaria, dengue and yellow fever and perhaps encephalitis. The Army also developed new insect repellants, effective not only against mosquitoes but also against mites, fleas and other insects known to be disease carriers.

Among the new weapons to be available to civilians after the war will be DDT, the new chemical insect killer, with which the Army solved the problem of typhus in Italy by destroying the body lice which transmit the infection. DDT is used in the Army in heavy oil solution for spraying on water or in light oil solution for spraying on walls and furniture. It is as effective against mosquitoes as it is against lice.

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Mayo General Hospital, Galesburg, Ill.: Laboratory Diagnosis and Its Relationship to Treatment, Drs. William S. Hoffman and Steven O. Schwartz, November 1.

Camp Ellis, Camp Ellis, Illinois: Symposium on Organic Neurology, Drs. Francis J. Gerty and Loren William Avery, November 1.

Chanute Field, Rantoul, Ill.: Chronic Chest Diseases and Diseases of the Larynx, Drs. Paul H. Holinger and Henry C. Sweany, November 1.

Schick General Hospital, Clinton, Iowa: Medical Rehabilitation, Dr. Frank H. Krusen, October 27.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, October 14, p. 440)

COLORADO

Colorado General Hospital, Denver. Capacity, 270; admissions, 3,718. Dr. Maurice H. Rees, Medical Superintendent (intern).

IOWA

Mercy Hospital, Des Moines. Capacity, 193; admissions, 5,357. Sister M. Anita, Superintendent (interns, residents).

NEW YORK

St. John's Long Island City Hospital, Long Island City. Capacity 284; admissions, 5,418. Sister Thomas Francis, Superintendent (interns).

WEST VIRGINIA

St. Mary's Hospital, Clarksburg. Capacity, 192; admissions, 4,201. Sister M. de Sales, Administrator (2 residents—mixed service).

ORGANIZATION SECTION

WASHINGTON LETTER

(From a Special Correspondent)

Oct. 16, 1944.

Action to Limit Production of Opium

The Department of State reveals that U. S. government missions abroad have been instructed to urge on governments of the chief opium producing countries that steps be taken to limit opium growth and production. While this action is motivated from the point of view of international well-being, the presence of American troops throughout the world makes the control problem a matter of concern in many American homes. The official move by the government was taken following passage by Congress early this summer of a resolution by Representative Walter H. Judd (Republican, Minnesota), long time Far East medical missionary, which called on the President to ask action to limit production to medicinal and scientific requirements "in the interest of protecting American citizens and those of our allies and of freeing the world of an age old evil." U. S. missions will transmit a copy of the Judd resolution to Afghanistan, China, Great Britain (for India and Burma), Iran, Russia, Turkey and Yugoslavia. So far Yugoslavia is the only country to receive the communication.

It is revealed here that United States ships carrying lend-lease goods for Russia and manned by American seamen are touching port every day in Iran, largest producer, where 50 to 75 per cent of the police force is said to be addicted to the drug habit. Many American and United Nations citizens are in Iran, and American soldiers are also in India and Burma, large producers of opium.

The United States is thus assuming leadership in opium control for the second time, having called the first international commission in 1909. The Judd resolution is described as the first step in present plans. The nation can exert pressure at this time on opium producing countries which are dependent on the United States for money, materials and men. National economies, once dependent on opium production in some instances, are now looking to lend-lease for materials and money in development of railways, highways and factories.

Representative Judd points out that when he proposed his resolution the opium revenue in British, Dutch and French Far East possessions ranged from 2 per cent of income in the Dutch East Indies up to 20 per cent in the British Straits Settlement colony, including the island of Singapore. A hopful development in the situation is the promise that was made by the British and Netherlands governments in November 1943 to prohibit the use of opium for smoking and to abolish opium monopolies in Far East territories when the Japs have been removed.

MEDICAL ECONOMIC ABSTRACTS

PROGRESS OF MEDICAL SERVICE PLANS

To form a basis for mutual comparison, the various medical society prepayment plans were asked by the Bureau of Medical Economics for as recent a financial report as it was possible to give. Some of the principal items of the reports received are given here. Copies of these reports in full are available for administrators of all existing and proposed plans.

Colorado Medical Service, Inc.—This was organized May 1, 1942 to serve metropolitan Denver and offers only a surgical contract. On March 1, 1943 it had about 5,000 members. On Sept. 30, 1943 it had received $17,856.20 income from subscribers and had an operating expense of $16,568.75. Its balance showed a surplus of $10,914.72.

Dallas County Medical Plan.—This was organized in 1940 to serve Dallas County and offers both medical and surgical contracts. On Jan. 1, 1944 it had 167 medical contracts and 24 surgical contracts. Its income was $6,951.25 and its total expense $4,960.23, leaving a net gain of $1,991.02. It had resources of $9,713.98 and a surplus of $1,991.02.

Group Hospital Service, Inc.—This was organized in 1943 as a plan for medical care sponsored by Group Hospital Service and serves the state of Delaware. It offers its contracts only in the form of a surgical service rider, issued only to subscribers to a hospital service plan. On Dec. 31, 1943 it had a total of 4,622 males and 6,166 females, including subscribers and dependents. On Dec. 31, 1943 it had received as income from subscribers $25,011.45, expended $8,700.52 and has a reserve of $16,310.93.

Hospital Saving Association of North Carolina, Inc.—This is a combination hospitalization and surgical plan, and the financial figures cover the combined operation. The hospitalization contract covers 66,162 males and 90,886 females. The surgical plan covers 13,535 males and 16,638 females. The total income from all subscribers for the period from Dec. 31, 1943 was $932,587.38. The plan as a whole now has a surplus of $311,703.30.

Massachusetts Medical Service.—The plan was organized in July 1942 and serves the state of Massachusetts. It offers a contract covering surgery, obstetrics, x-ray and anesthesia. On Dec. 31, 1943 it had a membership of 9,678 males and 11,306 females. During 1943 it received an income from subscribers of $41,949.78, of which it expended $12,045.36. On March 29, 1944 it had a surplus of $37,045.36.

Medical Service Association, Inc.—This was organized in 1940 and serves fourteen counties in North Carolina. It is operated only jointly with the local hospital service plan, with the medical contract on an indemnity plan. The membership of Oct. 30, 1943 was 13,031. Income to April 18, 1944 was $53,317.16. Of this amount $45,734.39 was spent for medical services and $4,775.96 for operating expense; $2,244.69 remains in the treasury. There is an operating reserve of $562.12.

Medical and Surgical Care, Inc.—This was organized in 1941. The original plan was changed somewhat in May 1942. It serves fifteen counties in central and northern New York. It offers its surgical contract with a medical rider operative only after the first two calls of any illness and allows credits on the patient's bill. About 19,200 persons are now enrolled for the ten months ended Oct. 31, 1943. There was a total income of $111,851.14; disbursements amounted to $94,906.09, and the plan has a surplus of $15,320.71.

Michigan Medical Service.—The first contract was issued March 15, 1940. The plan serves the state of Michigan, and at present its contracts are entirely surgical. On. Dec. 31, 1943 it had a total of 467,717 subscribers and dependents. Its income during 1943 was 3,367,372.95. During that year the total disbursements were $3,063,837.62, showing a total gain of $303,535.33. It has now accumulated a reserve of $136,242,71.

Western New York Medical Plan, Inc.—This was organized in March 1940 to serve six counties in western New York and offers medical-surgical contracts. It has 7,602 male and 7,437 female medical-surgical contracts, and 2,339 male and 2,711 for female surgery only. Its total income up to Dec. 31, 1943 was $119,275.93. Of this it expended $103,796.96 and has accumulated a surplus of $8,286.88.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Personal.—Dr. Jacob C. Geiger, San Francisco, on October 14 received the honorary degree of doctor of science from Tulane University of Louisiana School of Medicine, New Orleans. Dr. Geiger gave the commencement address on this occasion.——Dr. David E. Smallhorst, Glendale, health officer for the San Fernando District, has retired under civil service rules. He has been connected with the Los Angeles County Health Department since 1926.

Court Orders Restoration of Physician's License.—The state district court recently upheld a superior court verdict ordering restoration by the state board of medical examiners of the license of Dr. Thomas D. Wyatt, Redding, newspapers reported August 10. The license had been revoked by the board when it charged Dr. Wyatt with performing two illegal operations at a Redding hospital in March 1942, it was stated (THE JOURNAL, June 26, 1943, p. 629). The women involved testified in superior court that the operations were legal.

Position Open in San Diego.—The department of civil service and personnel of the County of San Diego announces a vacancy in the position of assistant director of public health of San Diego County. Applicants must be citizens of the United States, have a license to practice medicine in the state, have two years of successful experience in a recognized department of public health and present a certificate or degree from a recognized school of public health. The salary is between $405 and $422 a month. Additional information may be obtained from Room 212, Civic Center Building, San Diego 1.

GEORGIA

Personal.—Dr. John P. Kennedy recently retired as health officer of Atlanta, a position he held for forty-three years.

New Professor of Pediatrics.—Dr. Roger W. Dickson was recently appointed professor and chairman of the department of pediatrics at Emory University School of Medicine, Atlanta. Dr. Dickson was also made chief of the pediatric service in the Grady Hospital, Atlanta.

Building Planned for Georgia Medical School.—A new building to cost approximately $200,000 will be constructed for the University of Georgia School of Medicine, Augusta, when the war is over to take the place of the old college building, according to Dr. G. Lombard Kelly, dean. The old building will be converted into a student union, housing a swimming pool, gymnasium, restaurant and recreation rooms.

INDIANA

Changes in Health Personnel.—Dr. Clarke Rogers, Indianapolis, has been appointed a member of the Indianapolis Board of Health to succeed Dr. Arthur F. Weyerbacher, resigned.——Dr. Stephen C. Bradley has been placed in charge of the department of contagious diseases of the Terre Haute board of health, succeeding the late Dr. Maurice B. Van Cleave.

Dr. Page Goes to Cleveland Clinic.—Dr. Irvine H. Page, for seven years director of the Eli Lilly Laboratory for Clinical Research and the Lilly Clinic, Indianapolis, has resigned to become director of research for the Cleveland Clinic, Cleveland, effective January 1. Dr. Kenneth G. Kohlstaedt, assistant superintendent of the Indianapolis City Hospital, will succeed Dr. Page.

IOWA

First Annual Meeting on Mental Hygiene.—The Iowa State Society for Mental Hygiene, which was organized during the past year with Dr. Walter L. Bierring, Des Moines, state health officer, as president, will hold its first annual session at the Hotel Kirkwood, Des Moines, October 28. Among the speakers will be Major S. O. Meisner on "Problem of the Constitutional Psychopath"; Luther E. Woodward, Ph.D., New York, "Social Adjustment of Returning Veterans," and Mr. Everett S. Elwood, president, American Occupational Therapy Association, Philadelphia, "Occupational Therapy in War and Postwar." A panel discussion on "Mental Hygiene: Postwar will be conducted by Ralph H. Ojemann, Ph.D., Iowa City; Dr. Andrew H. Woods, Iowa City; King Palmer, Iowa Board of Social Welfare, Des Moines; Marjorie O. Lyford, R. N., Des Moines, and Dr. Robert L. Jackson, Iowa City.

KENTUCKY

Changes in Health Personnel.—Dr. Don E. Wilder, Grayson, has been named health officer of Breathitt County.——Dr. Wallace Byrd, Williamstown, has resigned as health officer of Grant County.——Dr. William L. Wright, Louisville, has been placed in charge of the Bell County Health Department, Pineville.——Dr. Charles J. Grubin, Arlington, Va., has been named health officer of Madison County with offices in Richmond.

State Medical Election.—Dr. J. Watts Stovall, Grayson, was chosen president-elect of the Kentucky State Medical Association at its annual meeting in Lexington and Dr. Oscar O. Miller, Louisville, was inducted into the presidency. Other officers include Drs. Kirby S. McBee, Owenton, Clement V. Hiestand, Campbellsville, and Walter I. Hume, Louisville, vice presidents. Dr. Philip E. Blackerby, Louisville, state health officer, is the secretary. The next annual meeting will be held in Bowling Green.

Visiting Professors Provided Under New Fund.—The Commonwealth Fund has established a fund to bring visiting professors to the University of Louisville School of Medicine. Dr. Carl V. Moore, associate professor of medicine, Washington University School of Medicine, St. Louis, was to start his residence October 9 to continue through October 21, and Dr. William F. Windle, professor of neurology and director of the institute of neurology, Northwestern University Medical School, Chicago, will be in residence for the month of November. Changes in the faculty at Louisville include the resignation, effective November 15, of Dr. Gerhard Lehmann, associate professor of pharmacology, to become pharmacologist of Hoffmann-La Roche, Inc., Nutley, N. J. Dr. Richard C. Porter, instructor in medicine, University of Buffalo School of Medicine, and associate director of laboratories in the Edward J. Meyer Memorial Hospital, Buffalo, has been made assistant professor of pharmacology at Louisville. He has a medical service in the Louisville General Hospital and will teach applied pharmacology to the medical students.

LOUISIANA

New Tuberculosis Society.—A charter has been adopted and the organization completed of the Tuberculosis Association of New Orleans with Drs. John H. Musser as president and Julius L. Wilson as medical consultant. The group formerly functioned as the Tuberculosis Committee of New Orleans.

Personal.—Dr. Marie-Louise M. Pareti has resigned as acting chief of the section of maternal and child health of the Louisiana State Board of Health to become assistant to Dr. James R. Reinberger, Memphis, Tenn.——Dr. Elvira A. Corrales-Smith, Monroe, has been appointed director of the Acadia Parish Health Unit.

MICHIGAN

Bruce Testimonial Lecture.—Dr. John W. Hirshfeld, Detroit, will deliver the opening lecture in each of the nine centers sponsored by the committee on postgraduate medical education of the Michigan State Medical Society this fall. His subject will be "Penicillin" and the lecture has been designated the James D. Bruce testimonial lecture in honor of Dr. Bruce, who has been chairman of the committee on postgraduate medical education for a long period.

Beaumont Gavel Given to State Society.—At special ceremonies recently the Mackinac Island State Park Commission, Mackinac Island, presented the Beaumont gavel to the Council of the Michigan State Medical Society. The gavel was carved out of the only piece of timber which has ever been allowed to be taken from the Early House on Mackinac Island, where Dr. William Beaumont cared for Alexis St. Martin. The wood is pure white pine and was grown and cut on the island and used in the original structure of the Early House. The presentation was made by Wilfred F. Doyle, chairman and resident commissioner of the Mackinac Island State Park Commission, who reported that the Early House had been purchased through a grant made by Parke, Davis & Company and outlined the plans to put the building into shape as a museum and memorial to Dr. Beaumont. Mr. Doyle recom-

mended the appointment of a permanent committee representing the Michigan State Medical Society, the Beaumont Foundation and the Mackinac Island State Park Commission to ensure maintenance of the Beaumont shrine.

Nutrition and Public Health.—"Implications of Nutrition and Public Health in the Postwar Period" will be the theme of a conference November 3 in the auditorium of the Horace Rackham Memorial Building, Detroit, under the auspices of the Children's Fund of Michigan. The following will participate:

Dr. Frank G. Boudreau, New York, The International Implications of Freedom from Want of Food.
Dr. Paul R. Cannon, Chicago, The Importance of Proteins in Resistance to Infection.
Dr. L. Emmett Holt Jr., Baltimore, Protein Deficiencies in Man.
Dr. Philip C. Jeans, Iowa Cty, Maintaining Dental Health.
Charles G. King, Ph.D., New York, Vitamins and the Health of the Nation.
Leonard A. Maynard, Ph.D., New York, Food Production for Better Health and Longer Life.
Elmer V. McCollum, Sc.D., Baltimore, Our National Diet and Future Health.
Roy C. Newton, Ph.D., Chicago, Role of Food Technology in Improving Nutrition.
Dr. Harold C. Stuart, Boston, Nutritional Reconditioning of Children in Occupied Countries.
Group Captain Frederick F. Tisdall, R. C. A. F., Research and Nutrition for Human Health.

MINNESOTA

Proposed Medical Foundation.—The merger of two funds within the Hennepin County Medical Society has been proposed to found the Hennepin County Medical Foundation. This plan, which would combine an existing trust fund in the society and the recently approved annuity-insurance setup, would finance medical research and laboratory projects, lectures, medical scholarships, awards for medical achievements, a medical library, the promotion of health education and loans, without interest, to physicians who have served in the armed forces and who will be in need of assistance in reestablishing themselves. It is believed that the contributions to the existing trust fund or to the proposed new fund would increase if contributions could be considered tax exempt, and a ruling on the subject is now under consideration.

NEW JERSEY

Dr. Shangle Honored.—A dinner was held in Elizabeth recently in honor of Dr. Milton A. Shangle in recognition of his promotion to the position of senior attending surgeon at the Elizabeth General Hospital and Dispensary, where he has served successively as intern, dispensary physician, assistant surgeon, gynecologist, obstetrician and surgeon. A portrait of Dr. Shangle, executed by Maxwell Stewart Simpson, Elizabeth, was presented to the physician by members of the staff. Dr. Shangle graduated at the Columbia University College of Physicians and Surgeons in 1900 and came to Elizabeth the following year.

Industrial Health Study.—Dr. Marie A. Sena, Newark, has been engaged by the bureau of industrial health of the New Jersey Department of Health to conduct a study of industrial health of workers in the food processing and related agricultural industries. Information on the medical facilities and plant health programs of canneries and of fertilizer, flour, feed and other industries will be obtained. The health and sanitary facilities of workers will be observed, according to *Industrial Medicine*. The bureau is beginning the publication of an Industrial Health Bulletin, the first issue of which will be devoted to the prevention of heat illness.

NEW YORK

New Executive Secretary of Westchester County.—Mr. Boyden Roseberry, director of the medical department of the Children's Aid Society of New York, is the new executive secretary of the Medical Society of the County of Westchester.

Ninety Years of Age.—Dr. Myron E. Carmer, who has been active in Lyons fifty-six years, celebrated his ninetieth birthday, September 17. The physician graduated at the University of Vermont College of Medicine, Burlington, in 1885.

Graduate Lectures.—Morton C. Kahn, Ph.D., associate professor of public health and preventive medicine, Cornell University Medical College, New York, will address the Memorial Hospital of Greene County and the Greene County Medical Society, October 26, Catskill, on "Transmission of Disease by Lice, Fleas, Ticks and Other Insects." On November 17 Dr. Leo E. Gibson, professor of clinical surgery (urology), Syracuse University College of Medicine, Syracuse, will discuss "Infections of the Genitourinary Tract" before the Cortland County Medical Society. Dr. Albert G. Swift, professor emeritus of surgery, Syracuse University College of Medicine, addressed the society, October 20, on "Surgical Lesions of the Biliary Tract."

New York City

Medical Alumni Honors Doorman.—Charles Costello, 75 year old doorman at Columbia University College of Physicians and Surgeons, was the guest of honor at a dinner, September 26, given by the medical school alumni association in recognition of his completion of fifty years of service to the university. Guest speakers at the dinner, which was the annual fall meeting and dinner of the alumni association, included Comdr. Gordon M. Bruce (MC), John F. Kieran and Dr. Willard C. Rappleye, dean of the college. Dr. John J. H. Keating, president of the alumni association, presided.

First Achievement Award Goes to Robert Dickinson.—On September 28 Dr. Robert L. Dickinson, in charge of a studio of medical art at the New York Academy of Medicine, received the first Alumni Achievement Award at the commencement exercises of Long Island College of Medicine, Brooklyn. Dr. Dickinson graduated at the college in the class of 1882. The medallion which constitutes the award bears the head of Hygeia, goddess of health. It has been established to honor graduates of the college who have made notable contributions to American medicine. Eleven prize awards went to ten students in the graduating class who trained for the army medical corps and one who trained for the navy medical corps. Top honors in the class went to Lieut. Hector Wright Benoit Jr., M. C., who received the Mitchell prize, awarded to the member of the class who in the judgment of the faculty is best qualified in all departments of medicine, and Lieut. Leonard Lincoln Madison, M. C., who received the Phi Delta Epsilon prize, awarded for the highest scholastic record. Lieutenant Benoit, who graduated at Cornell University, is serving his internship at Kings County Hospital and Lieutenant Madison, who graduated at Ohio State University, is serving his internship at Mount Sinai Hospital. Nine other prizes include:

Lieut. Raymond Saigh, M.C., the Dudley Medal for the best clinical report of a case in the medical wards of the college.
Lieut. Grafton Edgar Burke, M. C., the Dudley Memorial Medal for the best clinical report of a case in the surgical wards of the college.
Lieut. John Andrew Matheson, M. C., the Ford Prize for the best dissection.
Lieut. Charles Mindell Plotz, M. C., the Nathan H. and Johanna Szerlip Medal for the best thesis on pneumonia.
Lieut. Leonard Castleman, M. C., the Alumni Prize to the member best qualified in gynecology.
Lieut. Joseph Daniel Casolaro, M. C., Prize of the Class of 1898 to the member whose scholastic average in the fourth year has shown the greatest improvement over that of previous years.
Lieut. Joseph John Lambert Jr. (MC), the Obstetric Prize for the best thesis on a subject in obstetrics.
Lieut. Bernard Anatole Sachs, M. C., the Robert R. Benedict Jr. Prize for the best report on a psychosomatic study.
Lieut. Herbert Jay Rosen, M. C., the Joseph Howard Raymond Prize in physiology.

NORTH CAROLINA

Officers of Examining Board.—Dr. Charles W. Armstrong, Salisbury, was chosen president of the North Carolina State Board of Medical Examiners at the board's semiannual meeting in Raleigh in September, succeeding Dr. Lester A. Crowell Jr., Lincolnton. Dr. Ivan M. Proctor, Raleigh, is the new secretary of the board, succeeding Dr. William D. James, Hamlet.

Dr. Roger Baker Goes to Alabama.—Dr. Roger D. Baker, associate professor of pathology in charge of surgical pathology, Duke University School of Medicine, Durham, has been appointed professor and chairman of the department of pathology in the Medical College of Alabama at Birmingham, effective on December 1. Dr. Baker requests that necropsy and surgical materials for the Fungus Disease Registry be sent to him at Birmingham 5 after that date. The mycologic and serologic materials of this registry should continue to be sent to the office of Dr. David T. Smith, Duke Hospital, Durham.

Personal.—Dr. Yates S. Palmer, Valdese, has been appointed a member of the North Carolina Hospitals Board of Control.——Dr. Harold C. Whims, Newton, health officer of Catawba County, has also been given the administrative direction of the unit in Iredell County.——James C. Andrews, Ph.D., professor of biologic chemistry and head of the department at the University of North Carolina School of Medicine, Chapel Hill, is serving as exchange professor of biologic chem-

istry and nutrition at the National University of Guatemala Medical School, Guatemala City, for a period from September 1 to January 1. Granvil C. Kyker, Ph.D., is acting head of the department at the university.

OREGON

State Medical Election. — Dr. Lansford M. Spalding, Astoria, was chosen president-elect of the Oregon State Medical Society at its meeting in Portland, September 3, and Dr. Edward H. McLean, Oregon City, was installed as president. Other officers include Drs. James C. Hayes, Medford, Dean P. Crowell, Marshfield, and Burton A. Myers, Salem, vice presidents. Dr. Thomas S. Saunders Jr., Portland, was named secretary and Dr. Richard Lloyd Tegart, Portland, treasurer. Portland was tentatively chosen as the place for the 1945 session sometime in September.

PENNSYLVANIA

State Medical Election.—Dr. William L. Estes Jr., Bethlehem, was named president-elect of the Medical Society of the State of Pennsylvania at its annual meeting, September 20, and Dr. William Bates, Philadelphia, was inducted into the presidency. Dr. Walter F. Donaldson, Pittsburgh, is secretary. The next annual session will be held in Philadelphia about October 1.

Philadelphia

Lectures on Mental Hygiene.—The committee on nervous diseases and mental hygiene of the Philadelphia County Medical Society opened a series of lectures on mental hygiene September 25 with a talk by Dr. Frederick H. Allen on "Mental Health from the Standpoint of Child Guidance" and one by Dr. Ralph M. Tyson on "The Relation of Mental Health to the Growth and Development of the Child." Others in the series include:

Drs. Edward Weiss, Mental Health as Related to Internal Medicine, and O. Spurgeon English, Psychosomatic Medicine, October 2.
Drs. Winifred B. Stewart, Delinquency in Minors as Seen at the Municipal Court, and Gerald H. J. Pearson, Disturbances of Mental Health as Recognized in the Delinquency of Minors, October 9.
Drs. Edward A. Steinhilber, Recognition of Disturbances of Mental Health, and Joseph C. Yaskin, Aids to the General Practitioner in the Handling of Psychoneurosis, October 16.
Dr. Bernard J. Alpers, Disturbed Mental Health from Head Injuries and as an Organic Pathologic Condition, and Lieut. Comdr. Joseph F. Hughes (MC), Laboratory Methods Useful in the Study of Psychoses, Psychoneuroses and Convulsive States, October 23.
Drs. Leroy M. A. Maeder, Rehabilitation of Psychoneurotic Service Men and Their Psychologic Adjustment to Civilian Life, and Robert A. Matthews, Marital Situations in Which Mental Health Plays a Part, October 30.
Drs. H. Craig Bell, Responsibility of the Medical Man in the Role of an Activator of Mental Disturbance, and Samuel B. Hadden, Treatment of Psychoses, November 6.

Care of Mentally Defective Children. — A committee appointed by Charles L. Brown, president judge of the Municipal Court of Philadelphia, to study the problem of the care and disposition of the feebleminded, epileptic and the defective delinquent, has submitted a report. The committee has divided its recommendations into two groups, those concerned with institutional placement and those with extrainstitutional family placement. Concerning the former, it is urged that immediate provision should be made for an increase of at least 50 per cent in the bed capacity to be used largely for defective children of low earning and indigent families. For a long term program the bed capacity must be increased by at least 100 per cent. Specific recommendations pertain to certain institutions, one suggestion urging the establishment of a new institution for the feebleminded outside of Philadelphia to serve the city and the surrounding counties, thereby with other additions helping to eliminate the disparity (estimated as 2 to 1) between the bed capacity for defectives in the western part of the state as compared with the eastern part of the state. The report emphasizes the immediate need for special provisions to care for the group requiring custodial care (about 800 low grade defectives for Philadelphia). Special accommodations should be made for cases with accompanying physical handicaps. It is pointed out that an institution for defective delinquent boys, both white and Negro, under the age of 15 years is urgently needed. This should be an institution of the cottage system type with provisions for manual training through trade and farm schooling. It should be state controlled and, with a capacity of about 200, should serve Philadelphia and adjacent counties. Added accommodations are needed for a similar group to meet the needs of boys 16 and 17 years of age who are now committed to the Huntingdon Reformatory. There is also a need for an institution for female defective delinquents, irrespective of age and color, and one for the more seriously delinquent girls below 16 years of age. In its consideration of family placement facilities and extrainstitutional (community) care, the organization of a central agency, board of review, is urged for Philadelphia to register all mental defectives, epileptic persons and defective delinquent cases, to review all problem cases and to maintain follow-up records. This board should be established under the Philadelphia Department of Public Welfare and have available all data concerning changes in status and location of individual children. The expansion of the release and parole policy of institutions is treated in the report and the urgent need for special consideration in the family care in foster homes. Individual recommendations are made covering the systematic training, investigation and selection of the foster family.

TENNESSEE

Changes in Health Officers. — Dr. Joseph T. Nardo, Somerville, has resigned as director of the Fayette County Department of Health to reenter the U. S. Public Health Service. —— Dr. Rutherford O. Ingham, Johnson City, has resigned as director of the Washington County Health Department. He will be succeeded by Dr. Marion G. Fisher, Jonesboro.——Dr. Robert B. Griffin has been named director of the Jackson and Madison County Health Department to succeed Dr. Lamar A. Byers, who accepted a similar position in Coos County, Oregon.——Dr. Fray O. Pearson, director of the Chattanooga-Hamilton County Health Department, has resigned to enter private practice and become associated with the Earl Campbell Clinic, effective October 1. Dr. Paul M. Golley, director of the division of tuberculosis control, has been named director of the health unit. Dr. Pearson became head of the Hamilton County unit in 1939 and remained in the position when the city and county health departments were merged in 1941.

UTAH

Personal.—Dr. Ezra C. Rich, Ogden, was given a dinner by the Weber County Medical Society, August 23, in recognition of his completion of fifty years in the practice of medicine and of his eightieth birthday.

University News.—Dr. James P. Kerby has resigned as associate clinical professor of medicine (radiology) at the University of Utah School of Medicine, Salt Lake City. He had been serving on a part time basis. On September 10 the first graduation exercises of the new four year medical school were held. Thirty-two men and three women were granted the degree of doctor of medicine. Honorary degrees of doctor of science were conferred on Thomas Parran, Surgeon General of the U. S. Public Health Service, who gave the commencement address, and Dr. Samuel C. Baldwin, one of the pioneer orthopedic surgeons in Utah.

WISCONSIN

State Medical Election.—Dr. Patrick R. Minahan, Green Bay, was named president-elect of the State Medical Society of Wisconsin at its annual meeting in Milwaukee, September 19. Dr. Charles Fidler, Milwaukee, was installed as president. Mr. Charles H. Crownhart, Madison, is the secretary.

Meeting of Chest Physicians.—On September 17 the first annual meeting of the Wisconsin Chapter of the American College of Chest Physicians was held at the Hotel Schroeder, Milwaukee. The speakers included:

Dr. Frederick M. F. Meixner, Peoria, Ill., Pregnancy in Tuberculosis.
Dr. Minas Joannides, Chicago, Tuberculosis Control in General Hospitals.
Drs. Abraham R. Hollender and Paul B. Szanto, Chicago, Tuberculosis of the Nasopharynx.
Dr. Richard M. Davison, Chicago, Surgical Management of Empyema.
Dr. Jay Arthur Myers, Minneapolis, The Medical Profession and the Control of Tuberculosis.

Dr. Leon H. Hirsh, West Allis, is secretary-treasurer of the Wisconsin chapter.

University Society Meetings.—The University of Wisconsin Medical Society, Madison, opened its regular meetings October 3 with a presentation by Merle S. Nichols, Ph.D., and Paul H. Phillips, Ph.D., on "Fluorine and Dental Caries." Subsequent lectures in the series will include:

Dr. Charles J. Thill, Present Status of Penicillin Therapy, November 7.
Staff of McArdle Memorial Laboratory, Current Research Problems in Cancer, December 5.
Malcolm R. Irwin, Ph.D., Genetics and Resistance to Disease, January 2.
John A. E. Eyster, Ph.D., Recent Advance in Cardiac Physiology, February 6.
Harland W. Mossman, Ph.D., and Roland K. Meyer, Ph.D., Some Special Structures and Functions of the Ovary, March 6.
Dr. Philip P. Cohen, Some Aspects of Protein Metabolism in Disease, April 3.
Dr. Raymond C. Herrin, Recent Advance in Kidney Physiology, May 1.

GENERAL

National Committee on Alcohol Organized.—The organization of a National Committee for Education on Alcoholism, Inc., was announced October 2. Offices will be at 2 East 103d Street, New York. Elvin M. Jellinek, Sc.D., director of the Yale School of Alcohol Studies, New Haven, Conn. (THE JOURNAL, June 12, 1943, p. 454), is chairman of the board of the new committee and Mrs. Marty Mann is executive director.

Achievement Award Goes to Florence Seibert.—The National Achievement Award medal, sponsored by Chi Omega Sorority annually to honor "an American woman of notable accomplishments," was presented to Florence B. Seibert, Ph.D., associate professor of biochemistry at the Henry Phipps Institute in Philadelphia, October 6, by Mrs. Roosevelt. The honor goes to Dr. Seibert for her work in tuberculosis research.

Dr. Goodpasture Receives Sedgwick Medal.—The Sedgwick Memorial Medal of the American Public Health Association was presented to Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, October 3. The medal is given for distinguished service in public health. Dr. Goodpasture, among other achievements, is recognized for his work on originating a method to cultivate micro-organisms of typhus fever.

Sage Foundation Creates Department of Studies in the Profession.—Esther Lucile Brown has been appointed director of the newly organized department of studies in the professions of the Russell Sage Foundation, New York. Miss Brown has been a member of the foundation's staff since 1933 and is the author of five volumes dealing respectively with the professions of engineering, law, medicine, nursing and social work. According to an announcement, the department will continue to make studies or carry on research in the social aspects of the professions, having completed five studies before its formal organization.

Special Society Elections.—Major Barnes Woodhall, M. C., was elected president of the American Academy of Neurological Surgery at its recent meeting in White Sulphur Springs, W. Va., Dr. Arthur R. Elvidge, Montreal, vice president and Dr. Theodore C. Erickson, Madison, Wis., secretary-treasurer. —Capt. John C. Adams (MC) was chosen president-elect of the Aero Medical Association of the United States at its annual meeting in St. Louis, September 4, and Brig. Gen. Eugen I. G. Reinartz, M. C., was installed as president. Other officers include Dr. Delazon S. Bostwick, Ardmore, Pa.; Major Gen. David N. W. Grant, M. C.; Dr. William R. Stovall, Washington, D. C.; Air Commodore James W. Tice, R. C. A. F., and Col. Arnold D. Tuttle, M. C., retired, vice presidents; Dr. James C. Braswell, Tulsa, Okla., business manager and Dr. David S. Brachman, Detroit, secretary-treasurer.

Neuropsychiatric Meeting.—The Central Neuropsychiatric Association will hold its annual meeting at the Palmer House, Chicago, October 31. Among the speakers will be:

Dr. Loren W. Avery, Chicago, The Neurologic Symptoms Associated with Porphyrinuria.
Dr. Abram E. Bennett, Omaha, Meningiomata of the Foramen Magnum.
Dr. John L. Garvey, Milwaukee, Cases of Serum Neuritis.
Dr. Ladislas J. Meduna, Chicago, The Common Factors in Shock Therapy.
Dr. Howard D. McIntyre, Cincinnati, The Prognosis and Treatment of Multiple Sclerosis.
Dr. Joseph C. Michael and Charlotte Buhler, Minneapolis, Comparative Diagnostic Studies with the Use of Rorshach, Murray Apperception and Minnesota Multiphasic Tests.
Dr. Richard B. Richter, Chicago, Degeneration of the Basal Ganglia from Chronic Carbon Disulfide Poisoning in Monkeys.
Dr. Andrew L. Skoog, Kansas City, Mo., Nervous Complications of Sickle Cell Anemia.
Dr. Harold C. Voris, Chicago, Massive Extrusion of Lumbar Intervertebral Disks.

Other sessions will be held at the University of Chicago, Northwestern University, University of Illinois and Loyola University medical schools.

Maternal Mortality.—In 1942 there were twenty-nine states in which the maternal death rate was less than 2.5 per thousand live births, a record indicating the continued reduction in maternal mortality, according to statisticians of the Metropolitan Life Insurance Company. Two years earlier only two states recorded such a low figure. Of all the states South Carolina alone in 1942 had a maternal death rate of more than 5 per thousand live births, while the number of states totaled thirty-one in 1936. The change is attributed chiefly to the widespread use of sulfonamide drugs in cases of puerperal septicemia. In 1942 the leading causes of maternal deaths were septicemia, which accounted for more than 2,800 deaths, puerperal toxemia, which was responsible for 1,900 deaths, and puerperal hemorrhage, which caused about 1,100 deaths. One out of every 6 maternal deaths in the United States is due to abortion. This figure is an understatement, it was stated, "because many of the fatalities from illegal abortion are not reported as such and therefore are classified under other causes."

Committee for Mental Hygiene.—The thirty-fifth annual meeting of the National Committee for Mental Hygiene will be held at the Hotel Pennsylvania, New York, November 8-9. The program has been divided into four sections: mental hygiene of industry and reconversion, rehabilitation and the returning veteran, race relations and services to the mentally ill today. Included among the speakers will be:

Col. H. Edmund Bullis, The Hazards of Industrial Change-Over.
Dr. Bruno Solby, Washington, D. C., The Meaning of Mental Hygiene in Industry.
Dr. Matthew Brody, Brooklyn, Dynamics of Mental Hygiene in Industry.
Dr. Samuel W. Hamilton, Washington, Needs and Opportunities in the Mental Hospital Field.
Capt. Wilson R. G. Bender, The Man as He Leaves the Service.
Dr. Solomon W. Ginsburg, New York, Community Responsibility for Neuropsychiatric Discharges.
Mrs. Ethel Ginsburg, New York, Veteran Into Civilian—The Process of Readjustment.
Dr. Thomas A. C. Rennie and Luther E. Woodward, Ph.D., New York, Rehabilitation of the Psychiatric Casualty.
H. Scudder Mekeel, Ph.D., Madison, Wis., Cultural Aids to Constructive Race Relations.
Robert L. Cooper, Esopus, N. Y., Frustrations of Being a Member of a Minority Group: What Does It Do to the Individual and to His Relationship with Other People?
Harry C. Oppenheimer, New York, subject not announced.
Leonard Edelstein, Philadelphia, Dangers to Our Care of Patients.
Dr. Frank F. Tallman, Columbus, Ohio, What the Mental Hygiene Program of a State Might Be.

Features of a luncheon session will be the presentation of the Lasker Award in Mental Hygiene and an address by Lyman Bryson of the Columbia Broadcasting System, New York, on "Effect of Peace Conditions on International Amity."

Government Services

Medical Director of Public Health District Appointed

Dr. Otis L. Anderson, Washington, has been appointed medical director of district number 4 of the U. S. Public Health Service, with headquarters at New Orleans, to succeed Dr. Charles L. Williams, who recently went to Washington to become director of the Bureau of States Services (THE JOURNAL, September 9, p. 117).

Rotating Internships and Residencies

Applications are now being accepted to fill positions as rotating interns and psychiatric residents at St. Elizabeths Hospital, the federal institution for the treatment of mental disorders in Washington, D. C. The positions pay $2,433 a year, including overtime pay. The internship consists of nine months of rotating service including medicine, surgery, pediatrics (affiliation), obstetrics (affiliation) and, as conditions permit, psychiatry and laboratory. Applicants must be third or fourth year students in an approved medical school. Psychiatric resident positions consist of nine months in psychiatry. Applicants must have successfully completed their fourth year of study in a medical school and they must have the degree of B.M. or M.D. In addition they must have completed an accredited rotating internship of at least nine months or be serving such internship at the time of making application. Persons who attain eligibility but who are still serving their internship may have their names submitted for appointment, but they cannot enter on duty until they have completed their internship. There are no age limits for this examination, and no written test will be given. Applications will be accepted until the needs of the service have been met. Application forms may be secured at first and second class post offices, from the commission's regional offices, or direct from the U. S. Civil Service Commission, Washington 25, D. C. Appointments to federal positions are made in accordance with War Manpower Commission policies and employment stabilization programs.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 23, 1944.

Patulin for the Common Cold

In November 1943 a report was published on a clinical trial of patulin, a metabolic product of the mold Penicillium patulum, claiming that it had given significant results in the treatment of the common cold. The results in 95 cases were considered encouraging when compared with 85 controls. The discovery of an effective treatment for the common cold being thought desirable, the Medical Research Council decided to investigate. Definition of the common cold offered considerable difficulties. There is no reason to believe that the condition is always or even usually due to the same agent. A second difficulty is that the duration of colds is variable. Third, the objective signs are too variable to serve as criteria for the presence and progress of colds. To meet the first difficulty large numbers of patients at widely separated places were used. To meet the second difficulty alternate cases were given a spurious treatment and served as controls. Therapeutic trials were carried out in eleven factories with a total population of 90,000, and in three units of the post office with a population of 15,000. The test solution was instilled into the nostrils. In all, 668 patients were treated with patulin and 680 with a control solution. No evidence was found that patulin is effective in the treatment of the common cold.

The Casualties and Damage of the Second Battle of London

London has withstood two severe bombings from the air which were entirely indiscriminate. The first and more severe was in 1940 and was made by bombing planes. The second began on June 15 of the present year and was made with flying bombs. The first ten weeks were the period of greatest intensity. The number of persons evacuated from London amounted to 818,000. At the end of June 81,000 were sheltering in the stations of the underground tube railway, but this was an improvement compared to 123,000 in September 1940. In public shelters of all kinds there were 462,000, compared to 470,000 in November 1940. The intensity of the attack at the end of June was shown by the fact that nearly half of the 400,000 houses damaged in the first two weeks had not received even a "field dressing." Early in July London began to get into its stride, and the evacuation machinery was running smoothly. Apart from those who went at their own expense there went out under government plans no fewer than 818,000 persons: 228,000 mothers and expectant mothers, 537,000 children and 53,000 old, invalid and blind. One hundred London hospitals were damaged. The growing loss of beds and the possibility of an increasing attack led to evacuation of over 14,000 patients to hospitals all over Britain. The number of flying bomb casualties admitted to London hospitals was 14,558. The work in the hospitals from the start was magnificent. The ambulance service carried 27,000 casualties, and the first aid posts with their mobile units attended to 40,000 minor cases. The special ambulance service for transferring patients from damaged hospitals to others and for the reception of overseas casualties carried 52,000 patients in the first ten weeks.

Each flying bomb destroyed or damaged an average of four hundred houses during the ten weeks. Some 51,000 people were rehoused in requisitioned houses and 57,000 were billeted. A labor force of 75,000 was engaged in repairs of houses and other buildings. Everything possible was done to see that as many homes as possible were created in the coming months. At the present time there are nearly 900,000 houses in London in need of repair from bomb damage.

National Scheme for the Diagnosis of Pulmonary Tuberculosis by Mass Radiography

The Medical Research Council's Committee on Tuberculosis in Wartime recommended that mass radiography should be under the general direction of the Ministry of Health and should not be lightly undertaken. A high standard of quality was necessary for correct interpretation, which required great radiologic skill. The Mass Radiography Subcommittee of the Minister of Health's Standing Advisory Committee on Tuberculosis laid down that, when mass miniature radiography is undertaken on a large scale, trustworthy and comparable results can be secured only from the use of carefully designed standard apparatus. The government therefore ensured that the standard apparatus which is arranged to be manufactured and supplied to selected local authorities should be of the highest quality and able to meet much greater stresses than ordinary x-ray machines.

As employers may be considering arrangements for the mass radiography of their employees, the Ministry of Health has issued a warning and pointed out that there are difficulties and dangers which may not be obvious. The primary purpose of mass radiography is not diagnosis in the ordinary sense. The object is to discover in a group of ostensibly healthy persons those who have signs indicating the possibility of incipient disease, which should be further investigated by more intensive methods. Persons who do not have ground to suspect that they are in any risk of illness must be ready to be examined. Anything that would weaken public confidence in mass radiography would therefore impair its usefulness. So also would anything that would lead the public to expect too much from this new method.

It is important to realize that mass radiography has not made the diagnosis of pulmonary tuberculosis easier; on the contrary, it brings to light many symptomless minimal cases. Recovery occurs spontaneously in numbers of these without treatment, and the prognosis in any case can be assessed only by the most careful clinical investigation and periodic supervision. As the diagnosis of tuberculosis may involve change or loss of work and may prejudice life insurance, it should be made only by experts with all the diagnostic procedures at their disposal. Provision for this is made in the national scheme operated by the health authorities. Another point is that the government's mass radiography scheme includes arrangements for collecting far more information on the incidence of tuberculosis than has ever been available before, which will be of great value in the campaign against tuberculosis. This can be assured only by a uniform scheme and a standardized system of records.

Marriages

HARRY BELLACH, Brooklyn, to DR. ELIZABETH CORNFIELD of New Haven, Conn., in Brooklyn, September 10.

WILLIAM ANDREW DALE, Columbia, S. C., to Miss Corinne Craig Howell of Nashville, Tenn., September 11.

GEORGE SHERMAN RIPLEY JR., Mount Vernon, N. Y., to Miss Phyllis E. Walch of Torrington, Conn., June 28.

WILLIAM LYMAN HUFFMAN, Cleveland, to Miss Jane Elizabeth Molin of Lakewood, Ohio, in September.

ROBERT JAMES BARNETT, Greenwood, Miss., to Miss Martha Ann Robinson in New Orleans, August 26.

WILLIAM C. CLYNE to Miss Kathryn Fitzgerald, both of New York, in Katonah, N. Y., September 11.

RAYMOND F. GRENFELL, Pittsburgh, to Miss Maude Byrnes Chisholm of Columbia, S. C., August 19.

ALVIN J. BEECHER to Miss Violet Aurelia Dionca, both of Detroit, August 12.

M. BAXTER ASNIS, New York, to Miss Elfreda M. LEONDAR of Boston in May.

Deaths

Lieuen Moss Rogers ✠ Senior Surgeon, U. S. Public Health Service, Fort Worth, Texas; University of Texas School of Medicine, Galveston, 1916; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Psychiatric Association; served as vice president of the Kentucky Psychiatric Association; entered the U. S. Public Health Service Reserve as an assistant surgeon in October 1921 and became a member of the regular corps April 5, 1922, serving at the Quarantine Station, New Orleans; accepted a commission as a first lieutenant in the U. S. Army in 1917 and served in that capacity at Kelly Field, San Antonio, Texas; went overseas in July 1918 and became battalion medical officer of a front line unit; from 1922 to the time of his death he served as public health officer in New Orleans, Washington, D. C., New Mexico, Colorado, Missouri, New York, Texas and at the American Consulate, Cobh, Irish Free State; had been associated with Dr. Joseph Goldberger in the isolation of the pellagra preventive vitamin and the determination of the pellagra preventive values of various foods; from 1936 to 1940 had been medical officer in charge of field studies in mental hygiene at Lexington, Ky.; in 1940 detailed to Springfield, Mo., Medical Center for Federal Prisoners; transferred to the Federal Reformatory at Chillicothe, Ohio, in 1941 and at about the same time was promoted to senior surgeon; remained at the institution in Chillicothe until his most recent transfer, July 1, 1944, to the U. S. Public Health Service Hospital in Fort Worth, where he died September 7, aged 53, of coronary thrombosis.

John Sinclair Dye ✠ Waterbury, Conn.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; Columbia University College of Physicians and Surgeons, New York, 1915; fellow of the American College of Surgeons; past president of the New Haven County Medical Association and the Waterbury Medical Association; first lieutenant, Tennessee National Guard, Company B, Detached Cavalry, from 1901 to 1908; entered the medical corps of the U. S. Army during World War I as a captain and advanced to the rank of colonel after two years; after the war worked for a time in the Surgeon General's Office, standardizing the surgical services of army base hospitals in this country; later served as chief of the division of surgery in the Surgeon General's Office; colonel, medical reserve corps, not on active duty; at one time member of the board of health in Chattanooga, Tenn., where he was chief of staff of the Erlanger Hospital from 1908 to 1914; chief surgeon at the Chase Brass and Copper Company; on the staffs of St. Mary's Hospital and the Waterbury Hospital, where he died August 9, aged 67, of coronary occlusion with pulmonary embolism and infarction.

Walter Hughson ✠ Chestnut Hill, Pa.; Johns Hopkins University School of Medicine, Baltimore, 1918; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology, American Laryngological, Rhinological and Otological Society, American Otological Society, Inc., and the American Association of Anatomists; formerly assistant and instructor in anatomy, associate in applied anatomy and surgery, associate professor of surgery and associate surgeon, associate in clinical surgery, associate in research otology and associate professor of otology at the Johns Hopkins University School of Medicine, Baltimore; served as assistant visiting surgeon to the Johns Hopkins Hospital, Baltimore; instructor in otolaryngology at the University of Pennsylvania School of Medicine and associate in otology at the University of Pennsylvania Graduate School of Medicine, Philadelphia; consultant to the Bureau of Child Hygiene, U. S. Public Health Service; since 1935 director of the otologic research laboratory at the Abington Memorial Hospital, Abington, where he died September 13, aged 53, of pneumococcic meningitis.

Robert **Bennett Bean,** Charlottesville, Va.; Johns Hopkins University School of Medicine, Baltimore, 1904; retired in 1942 as professor of anatomy at the University of Virginia Department of Medicine, where he had been since 1916; assistant in anatomy at his alma mater, 1904-1905; instructor of anatomy at the University of Michigan, Ann Arbor, from 1905 to 1907; formerly director of the anatomic laboratory and associate professor of anatomy at the Philippine Medical School, Manila; at one time associate professor of anatomy and professor of Gross anatomy at the Tulane University School of Medicine, New Orleans; served as president of the New Orleans Academy of Sciences; fellow of the American Association for the Advancement of Science; member of the American Association of Anatomists and the American Anthropological Association; corresponding member of the Societa Romana Antropologia; author of "Racial Anatomy of the Philippine Islanders," 1910, "Races of Man," 1932, and "Peopling of Virginia"; died in Staunton August 27, aged 70, of cerebral arteriosclerosis and cerebral hemorrhage.

John Borneman Ludy ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1906; specialist certified by the American Board of Dermatology and Syphilology; member of the American Academy of Dermatology and Syphilology; demonstrator of dermatology at the Jefferson Medical College; served during World War I; colonel, medical reserve corps, U. S. Army, not on active duty; author of "Atlas of Skin Disease"; received an honorary degree of doctor of science from the Franklin and Marshall College, Lancaster, Pa.; consulting dermatologist to the Delaware County Hospital, Drexel Hill, and Norristown State Hospital, Norristown; dermatologist, American Oncologic Hospital, Hospital of the Protestant Episcopal Church, Lankenau Hospital, Methodist Hospital, Philadelphia General Hospital, Pennsylvania Hospital and the Abington Memorial Hospital, Abington, Pa., where he died September 11, aged 64, of cardiorenal disease.

Hermann Bertram Gessner ✠ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1895; since 1936 professor of clinical surgery, emeritus, at his alma mater, where he had been lecturer and demonstrator of operative surgery, professor of operative surgery and clinical surgery and professor of clinical surgery; president of the Louisiana State Medical Society, 1930-1931, and the Orleans Medical Society in 1902; member of the Southern Medical Association and the Southern Surgical Association; fellow of the American College of Surgeons; acting assistant surgeon in the U. S. Public Health Service in 1897 and 1905; veteran of the Spanish-American War; first lieutenant in the medical reserve corps of the U. S. Army from 1909 to 1917; served on the Mexican Border in 1916; for many years on the staffs of the Charity Hospital and the Touro Infirmary; author of "Laboratory Exercises in Operative Surgery"; died August 31, aged 72, of coronary thrombosis.

Ned Rudolph Smith ✠ Tulsa, Okla.; University of Michigan Medical School, Ann Arbor, 1921; member of the American Psychiatric Association and the Southern Medical Association; past president and trustee of the Tulsa County Medical Society; president of the city board of health; in 1926 joined the staff of the Hertzler Hospital and Clinic in Halstead, Kan., where he had been in charge of the neurology and psychiatry work; medical director of the Oakwood Sanitarium; served as psychiatrist at the Tulsa Induction Center for one year; member of the chamber of commerce and the Kiwanis Club; on the editorial board of the *Journal of the Oklahoma State Medical Association;* on the staffs of the Hillcrest Memorial Hospital and St. John's Hospital, where he died August 18, aged 60, of coronary thrombosis.

Max Harold Hoffman ✠ St. Paul; University of Minnesota Medical School, Minneapolis, 1921; since 1937 clinical assistant professor of medicine at his alma mater, where he had been assistant in medicine from 1922 to 1924 and instructor from 1925 to 1936; specialist certified by the American Board of Internal Medicine; member of the Central Society for Clinical Research, Minnesota Academy of Medicine and the Minnesota Pathological Society; in 1941 president and formerly vice president and secretary-treasurer of the Minnesota Society of Internal Medicine; visiting physician to the Ancker Hospital, Charles T. Miller Hospital and St. Joseph's Hospital; died August 22, aged 48, of coronary heart disease.

John Janney Lloyd ✠ Rochester, N. Y.; University of Virginia Department of Medicine, Charlottesville, 1903; specialist certified by the American Board of Internal Medicine; member of the American College of Chest Physicians, National Tuberculosis Association and the American Clinical and Climatological Association; for many years medical director of the Monroe County Tuberculosis Sanatorium; at one time resident physician of Catawba Sanatorium, Catawba Sanatorium, Va.; consultant in tuberculosis to the Strong Memorial Hospital and consulting physician to the Rochester General Hospital; consultant, silicosis board, state department of labor; died September 22, aged 65, of cerebral thrombosis.

Edwin Dial Watkins, Memphis, Tenn.; Columbia University College of Physicians and Surgeons, New York, 1906; served an internship at the Presbyterian Hospital, New York; specialist certified by the American Board of Ophthalmology;

fellow of the American College of Surgeons; formerly associate professor of gynecology and clinical assistant and assistant in ophthalmology at the University of Tennessee College of Medicine; served during World War I; formerly on the staffs of the Baptist Memorial Hospital and Memphis Eye, Ear, Nose and Throat Hospital; died in the Veterans Administration Facility July 31, aged 62, of cirrhosis of the liver.

Benjamin Everett Reeves, West Jefferson, N. C.; College of Physicians and Surgeons, Baltimore, 1891; coroner of Ashe County; Ashe County physician for prison, poorhouse and state prison camp; member of the board of trustees for the North Carolina schools for the deaf and blind; medical examiner for the draft board of the county during World War I and II; assistant surgeon for the Norfolk and Western Railway; president of the First National Bank; served on the county road commission, town council and school committee and in the state legislature; died August 30, aged 77, of heart disease.

Claude Vernet Davis ✠ Pennsville, Ohio; Ohio State University College of Medicine, Columbus, 1917; served an internship at the St. Luke's Hospital, Cleveland; president of the Ohio State Medical Board, serving at one time as vice president and member of the board; president of the Morgan County Medical Society; member of the Morgan County Draft Board; served at Base Hospital number 123 near Mars, France, during World War I; on the staff of the Memorial Hospital, Marietta, where he died August 16, aged 57, of cerebral hemorrhage.

Moody Warren Arnold ✠ New York; Vanderbilt University School of Medicine, Nashville, Tenn., 1912; medical superintendent of the Home for Incurables; died in the New York Post-Graduate Medical School and Hospital August 21, aged 56, following an operation for carcinoma of the duodenum and pancreas.

Jacob Axelrad, New York; Columbia University College of Physicians and Surgeons, New York, 1908; died August 10, aged 63, of coronary thrombosis.

Webster A. Becher, North Industry, Ohio; University of Wooster Medical Department, Cleveland, 1902; member of the Ohio State Medical Association; served on the staff of the Mercy Hospital in Canton; died August 1, aged 76, of coronary infarction.

William Wheeler Bolster ✠ Lewiston, Maine; Medical School of Maine, Portland, 1908; formerly assistant professor of physiology at his alma mater; at one time a member of the school board in Auburn; for many years on the staff of the Central Maine General Hospital, where he died August 11, aged 70, of cerebral hemorrhage.

Albert James Bower ✠ Greenville, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; fellow of the American College of Surgeons; served during World War I; on the staff of the United Memorial Hospital; died August 15, aged 63, of coronary heart disease.

Robert Boyd, Brooklyn; College of Physicians and Surgeons, New York, 1891; veteran of the Spanish-American War; died in the Cumberland Hospital August 1, aged 74, of coronary thrombosis.

Glenn Zimmerman Brant ✠ Berlin, Pa.; Temple University School of Medicine, Philadelphia, 1936; served an internship at the Harrisburg Polyclinic Hospital, Harrisburg; on the staff of the Somerset Community Hospital, Somerset; first lieutenant in the medical reserve corps of the U. S. Army from March 1, 1941 to Jan. 5, 1943; died in Bristol Bay, Alaska, May 19, aged 34, of suffocation by smoke.

James Frank Brooke ✠ Colonel, U. S. Army, retired, Greenville, N. C.; Kansas City Hahnemann Medical College, Kansas City, Mo., 1903; U. S. Army Medical School, 1921; commissioned a first lieutenant in the medical corps of the U. S. Army on Nov. 22, 1918; later promoted to captain, major, lieutenant colonel and colonel; retired Feb. 29, 1944; formerly post surgeon at Bolling Field, Anacostia, D. C.; died August 9, aged 64, of coronary occlusion.

John Bernard Brown, Paxton, Ill.; Illinois Medical College, Chicago, 1902; died September 12, aged 68, of coronary occlusion.

Charles O. Burgess, Monmouth, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; member of the Illinois State Medical Society; formerly deputy coroner for Warren County; served as a member of the pension examining board for veterans; on the staff of the Monmouth Hospital; died August 24, aged 68, of carcinoma.

Aaron Fenton Burson, Oakwood, Ohio; Eclectic Medical College, Cincinnati, 1910; member of the Ohio State Medical Association; served during World War I; was killed August 8, aged 59, in an automobile accident.

George Barnes Case, Syracuse, N. Y.; Syracuse University College of Medicine, 1909; member of the Medical Society of the State of New York; died August 11, aged 60, of probable coronary thrombosis.

Ferdinand Chenik ✠ Detroit; Detroit College of Medicine and Surgery, 1924; fellow of the American College of Chest Physicians; a founder and formerly medical superintendent of the Chenik Hospital; author of "White Plague"; died near Westlaco, Texas, August 15, aged 51.

Hiram Edward Cleveland ✠ Burlington, Wash.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; member of the North Pacific Surgical Association; fellow of the American College of Surgeons; past president of the Washington State Medical Association; served as chief of staff, Burlington General Hospital; local surgeon for the Great Northern Railway; member of the chamber of commerce; died August 21, aged 69, of arteriosclerotic heart disease.

James William Craddock ✠ Louisville, Ky.; Kentucky School of Medicine, Louisville, 1904; died in the Kentucky Baptist Hospital August 1, aged 65, of bronchopneumonia.

William David Culin, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1894; associate professor emeritus of gynecology at his alma mater; fellow of the American College of Surgeons; consulting gynecologist at the Women's Homeopathic Hospital; died August 24, aged 80, of coronary thrombosis.

Oscar H. Damron ✠ Silex, Mo.; Keokuk (Iowa) Medical College, 1896; died August 30, aged 74, of angina pectoris.

Edward Davenport, Hopkinsville, Ky.; University of Louisville Medical Department, 1901; member of the Kentucky State Medical Association; clinical director of the Western State Hospital; formerly superintendent of the Eastern State Hospital, Lexington; died August 22, aged 60, of coronary occlusion.

Harry Edward W. Fenton, Ancon, C. Z.; University of Louisville (Ky.) School of Medicine, 1929; served an internship at the Gorgas Hospital; diplomate of the National Board of Medical Examiners; member of the Medical Association of the Isthmian Canal Zone; first lieutenant in the medical reserve corps of the U. S. Army, not on active duty; since 1930 employed as physician by the health department of the Panama Canal Zone; died August 17, aged 37, of adrenal hemorrhage.

Howard Sinnickson Forman, Lee, Mass.; Columbia University College of Physicians and Surgeons, New York, 1896; served during World War I; formerly on the staff of the Christ Hospital, Jersey City, N. J.; member of the Rotary clubs of Lee and Jersey City; died in the House of Mercy Hospital, Pittsfield, September 19, aged 73, of cerebral hemorrhage following an operation.

Clare Edwin Fraunfelter ✠ Canton, Ohio; Rush Medical College, Chicago, 1904; past president of the Stark County Medical Society; for many years a member of the staff of the Aultman Hospital, serving as president for several terms; died September 5, aged 67, of cerebral thrombosis.

Abbott James Fuller ✠ Pemaquid, Maine; University of Vermont College of Medicine, Burlington, 1907; secretary of the Knox County Medical Society; served as an officer in the U. S. Army during World War I; member of the staffs of the Knox County General Hospital in Rockland and the Miles Memorial Hospital in Damariscotta; died August 18, aged 59, of cerebral hemorrhage.

Byron Edgar Giannini, Shepherdsville, Ky.; University of Tennessee Medical Department, Nashville, 1905; member of the Kentucky State Medical Association; died August 4, aged 62, of heart disease.

Orla Hilliard Gillett ✠ Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1923; fellow of the American College of Surgeons; on the staffs of the Butterworth and Blodgett Memorial hospitals; served an internship, a residency and as chief of surgery at St. Mary's Hospital, where he died August 2, aged 51, of cerebral hemorrhage.

Gordon Parker Goodfellow ✠ East Orange, N. J.; Detroit College of Medicine and Surgery, 1929; captain, medical corps, Army of the United States, from Aug. 8, 1942 to Dec. 1, 1943; on the staff of the East Orange General Hospital,

where he died July 25, aged 40, of coronary thrombosis and vascular disease.

Mark Gordon, Brooklyn; Baltimore Medical College, 1900; for many years attending physician and chief of clinic at the Beth-El Hospital; died August 17, aged 70, of coronary thrombosis.

Theodosia S. Fowler Johansen, Morristown, N. J.; Eclectic Medical College of the City of New York, 1901; died in the Muhlenberg Hospital, Plainfield, July 27, aged 73, of cerebral embolism and carcinoma of the uterus.

John Allen Johnston ✠ Fort Lauderdale, Fla.; University of Georgia Medical Department, Augusta, 1908; president of the Broward County Medical Society; formerly assistant professor of anatomy at his alma mater; at one time health officer of Bainbridge and Lafayette, Ga.; chief of obstetric staff, Broward General Hospital, where he died August 21, aged 60, of cardiac asthma and pneumonia.

Wilbur Merriam Judd ✠ Greystone Park, N. J.; University of Vermont College of Medicine, Burlington, 1927; resident physician at the New Jersey State Hospital; died September 1, aged 42, of cerebral hemorrhage.

William George Martin ✠ Columbus, Ohio; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1911; for many years medical examiner for the Norfolk and Western Railroad Company; died in the White Cross Hospital August 30, aged 56, of cerebral hemorrhage.

Benjamin F. Matheny ✠ Parsons, W. Va.; Baltimore University School of Medicine, 1906; served as coroner of Harrison County; on the staff of the Tucker County Hospital; died September 8, aged 65, of coronary occlusion.

Aloysius Alphonsus Mulligan, Harrison, N. J.; Baltimore Medical College, 1905; died July 9, aged 63, of cardiovascular renal disease.

Henry Alphonse Paradis ✠ Sparks, Nev.; Baltimore University School of Medicine, 1901; past president of the Nevada State Medical Association; member of the Pacific Association of Railway Surgeons; for many years division surgeon, Southern Pacific Company; served during World War I; at one time health officer of Sparks; member of the staffs of the St. Mary's and Washoe County General hospitals in Reno; died August 10, aged 66, of bronchogenic carcinoma.

Harlow Orville Shockley, Darlington, Wis.; Rush Medical College, Chicago, 1899; served an internship at the Presbyterian Hospital, Chicago; past president and secretary of the Lafayette County Medical Society; mayor of Darlington for seven years; president of the First National Bank of Darlington; died August 16, aged 71, of coronary thrombosis and chronic nephritis.

Daniel Dewitt Van Voorhis, Beecher, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1893; for many years surgeon for the Chicago and Eastern Illinois Railroad; killed September 12, aged 70, when the automobile in which he was driving was struck by a truck.

John T. Warford ✠ Lansing, Mich.; Medical Department of Tulane University, New Orleans, 1891; member of the staff of the Edward W. Sparrow Hospital; died in Philadelphia July 30, aged 75, of acute cardiac failure.

Herbert Tiffany Weston, West Hartford, Conn.; Baltimore Medical College, 1890; for many years connected with the professional liability division of the Aetna Life Insurance Company; died in Hartford July 28, aged 75, of heart disease.

Clarence Leon Wilson, Chicago; University of Illinois College of Medicine, Chicago, 1920; member of the Illinois State Medical Society; specialist certified by the American Board of Obstetrics and Gynecology; field consultant, division of maternal and child hygiene, State of Illinois Department of Public Health; senior associate attending obstetrician to the Provident Hospital; died August 28, aged 49, of carcinoma.

John Russell Woods, Columbus, Ohio; Ohio Medical University, Columbus, 1904; died July 10, aged 63, of cerebral hemorrhage.

Robert Elmore Wright ✠ Dallas, Texas; Atlanta College of Physicians and Surgeons, 1913; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology, Texas Ophthalmological and Otolaryngological Society, Dallas Academy of Ophthalmology and Otolaryngology, Southern Clinical Society and the Southern Medical Association; served as president of the general staff of the Medical Arts Hospital; died July 11, aged 57, of cardiorenal disease.

DIED IN MILITARY SERVICE

Elmer Barney M. Casey ✠ St. Louis; National University of Arts and Sciences Medical Department, St. Louis, 1917; served during World War I; commissioned a captain in the medical reserve corps of the U. S. Army on Nov. 28, 1924; later promoted to major and lieutenant colonel; began active duty on July 15, 1941; died in the Walter Reed General Hospital, Washington, D. C., July 25, aged 51, of carcinoma of the intestine.

James Halbert Gambrell, El Paso, Texas; Baylor University College of Medicine, Dallas, 1910; served an internship at St. Paul's and Baylor hospitals in Dallas; formerly instructor of surgery at his alma mater; served as chief of staff of the Masonic and El Paso County hospitals; formerly member of the city school board; in 1916 accepted a commission as lieutenant in the medical corps of the Texas National Guard and served on the Texas-Mexican border during the punitive campaign against Pancho Villa; served with the 36th division in France during World War I; commissioned a major in the medical reserve corps of the U. S. Army on Oct. 7, 1919, later promoted to lieutenant colonel and colonel; began active duty as a colonel on Jan. 21, 1942; served as commanding officer of the 51st, 67th and 96th General hospitals when these units, each in turn, were activated and trained for overseas duty; medical training officer of the military training division of the Eighth Service Command in Dallas, where he died April 23, aged 59, of coronary arteriosclerosis and coronary thrombosis.

William Arthur Johnson ✠ Uniontown, Pa.; University of Pittsburgh School of Medicine, 1935; served an internship at the Pittsburgh Medical Center; interned and served as assistant resident in obstetrics and gynecology at the New York Hospital; served a residency in obstetrics at the New York Polyclinic Medical School and Hospital in New York; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on June 5, 1935; began active duty on Dec. 5, 1940; promoted to captain in November 1941 and major in November 1942; went overseas in December 1943; killed while on duty as a flight surgeon in Gunnislake, England, June 11, aged 32, in an aircraft accident.

James Patrick Jordan, North Tonawanda, N. Y.; St. Louis University School of Medicine, 1932; member of the Medical Society of the State of New York; diplomate of the National Board of Medical Examiners; member of the National Gastroenterological Association; specialist certified by the American Board of Internal Medicine; served an internship at the Buffalo Hospital of the Sisters of Charity and a residency in medicine at the Millard Fillmore Hospital, Buffalo; commissioned a lieutenant commander in the medical corps of the U. S. Naval Reserve on Sept. 5, 1942 and began active duty on Oct. 26, 1942; had been assigned to the Office of Naval Officer Procurement in Rochester, N. Y.; died in the South Atlantic area off the coast of South America July 23, aged 44, of bronchopneumonia.

Joshua Levitsky ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1936; served an internship at the Mount Sinai Hospital; commissioned a first lieutenant in the medical corps, Army of the United States on Oct. 21, 1942; later promoted to captain; began active duty on Dec. 10, 1942; died in England, April 25, aged 31, as the result of injuries received in an airplane crash.

Harry Meyer ✠ New York; University and Bellevue Hospital Medical College, New York, 1922; served an internship at St. Mark's Hospital; commissioned a major in the medical corps, Army of the United States, on Sept. 11, 1942; died in the Lawson General Hospital, Atlanta, Ga., August 4, aged 47, of malignant hypertension.

Allen Sydney Morris, Buffalo; University of Buffalo School of Medicine, 1926; member of the Medical Society of the State of New York; interned at the Buffalo City Hospital; served on the staff of the Millard Fillmore Hospital; formerly connected with the city health department; commissioned a captain in the medical corps of the Army of the United States on July 27, 1942; later promoted to major; died at Camp Rucker, Ala., August 31, aged 43, of myocardial failure.

Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act, and in cases in which they refer to drugs and devices they are designated D.D.N.J. and foods, F.N.J. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

Armi Mineral Water.—Ralph R. Markwood, trading as Armi Mineral Water Company, Toledo, Ohio. Shipped July 2 and August 15, 1940. Substantial amounts of sodium sulfate and lime, not more than 0.15 grain of silicon dioxide per quart (declared an insignificant quantity present in many city water supplies) and only traces of, if any, potassium diphosphate, manganese and potassium chlorides, magnesium, calcium, sodium and ferric phosphates, potassium iodide or lithium bromide. Misbranded because label falsely represented product to contain important and substantial amounts of the substances in the last-named group. Also misbranded because label did not give the common or usual name of each active ingredient, since one of them was slaked lime, which label listed as calcium hydroxide. Further misbranded because label did not so list ingredients as to make them understood by the ordinary individual, with the exception of lime and sodium sulfate, which were present, if at all, in unimportant and inconsequential proportions. Misbranded again because of misleading zigzag design on label depicting lightning, and because the statement "Treated By Electrolysis" failed to reveal that any treatment by electrolysis to which the article may have been subjected had not affected its properties. Misbranded, finally, because label claim, "Scientifically Balanced," was false and misleading when applied to water to which had been added small amounts of lime and sodium sulfate and inconsequential amounts of other substances.—[*D.D.N.J., F.D.C. 777; September 1943.*]

Floramucin.—Lawrence M. Williams, trading as Lawrence Laboratories, Chicago. Shipped Jan. 27 and March 7, 1941. Composition: essentially the mucilaginous portion of psyllium seed, with karaya gum, sugar and dextrin. Misbranded because of misrepresentation that it would detoxify and be efficacious in treating biliousness, sore stomach, indigestion, intestinal stasis, excess gas, colitis, torpid liver, and stomach and bowel troubles; that it would combat constipation and colitis without laxatives, thus implying that it was not a laxative; that it would keep the digestive tract vigorous and healthy, insure quick and effective relief from faulty elimination, and do some other things; that it was not a drug or laxative, did not contain a gum, and was more than a bulk-producing laxative.—[*D.D.N.J., F.D.C. 766; September 1943.*]

Howell's Cocoa & Quinine Syrup.—Howell Company, Inc., New Orleans. Shipped between Feb. 21, 1940, and Jan. 6, 1941. Composition: labeled to contain 2 grains of quinine sulfate per teaspoonful, whereas only 1.65 grains were found by analysis. Hence misbranded.—[D.D.N.J., *F.D.C. 807; December 1943.*]

Mentho-Thymoline.—Standard Drug Company, Inc., Spartanburg, S. C. Shipped Feb. 28 and March 13, 1941. Composition: essentially a mixture of small amounts of camphor, menthol and thymol, incorporated in a petrolatum base. Misbranded because labeling falsely represented product as a cure or treatment for inflammations, colds, croup, sore throat, burns, wounds, hemorrhoids, headache and earache; further misbranded because the name Mentho-Thymoline was misleading in suggesting that the product consisted solely of menthol and thymol, whereas it contained other active ingredients; also misbranded because label did not accurately declare the quantity of the contents.—[*D.D.N.J., F.D.C. 805; December 1943.*]

Pitcher's Castoria.—Roma Extract Company, Inc., Boston. Shipped. Nov. 10, 1941. Composition: essentially extracts of plant drugs, including senna, Rochelle salt (approximately 0.28 per cent), sodium bicarbonate (2.5 per cent), santonin (0.027 per cent) and flavoring materials, including methyl salicylate, with sugar and water. Misbranded because of false label claims: "A Reliable Remedy for . . . Diarrhea due to Constipation, Worms, and Promotes Sleep by Overcoming these Disorders;" further misbranded because active ingredients were not listed on label in such terms as to make them easily understood by the ordinary individual. Also misbranded because label did not give the common or usual name of each active ingredient; misbranded, finally, because container was so made and filled as to be misleading, since carton was materially larger than necessary to hold the bottle.—[*D.D.N.J., F.D.C. 782; September 1943.*]

Vi-Penta Drops 'Roche.'—Hoffman-La Roche, Inc., Nutley, N. J. Shipped April 22, 1941. Composition: less than the claimed 9,000 units of vitamin A per 0.6 cc. Adulterated and misbranded for this reason. Also misbranded because falsely represented as efficacious for malnutrition, infections, anemias, tuberculosis, typhoid fever, diarrhea, colitis, obesity, diabetes, catarrhal jaundice, certain skin diseases (such as eczema), prophylaxis of abnormal dentition, and periods of vomiting, such as in infancy, childhood or pregnancy.—[*D.D.N.J., F.D.C. 774; September 1943.*]

Correspondence

THE RELIEF OF PAINFUL THIGH STUMP AND SCIATICA

To the Editor:—In THE JOURNAL, April 8, page 1030, in his article on "Pain After Amputation and Its Treatment," Dr. J. C. White writes "In this discussion of intractable pain which may follow amputation I should like to begin by pointing out how little is known about it, and what an opportunity is awaiting surgeons in the military forces today for gaining a better insight into its mechanism, as well as for devising effective methods of treatment." The following case seems pertinent:

An aviator aged 30 crashed five years previously, the injury requiring supracondylar amputation of the right thigh; a few weeks later the stump became painful and was injected with saline solution. Then the sciatic nerve was alcoholized and one year later 4 inches of it was removed, but without relief, and he took to narcotics. On Jan. 27, 1944 he was suddenly seized with an excruciatingly severe and almost unbearable pain in the stump and was then referred to me by Coroner T. C. Goraczewski. He came in at 10 p. m. suffering agonizing pain in the sciatic nerve with tonic contraction of the hamstrings, which aggravated the pain. Employing a technic I devised and have been successfully using in sciatica I searched for and found a wincing spot of tenderness over the sacral origin of the sacrospinalis in the dorsal hollow of the sacrum and injected it with 1 cc. of 2 per cent procaine hydrochloride, with instantaneous relief of the pain and disappearance of the tonic spasm. At the time of this writing (September 18) the patient states that the relief has been maintained, including freedom from the tickling sensations in the phantom ankle and toes of the amputated limb.

I suggest the following mechanism as being operative in these cases: In response to a peripheral irritation the piriformis and obturator internus (with the gemelli), from between which the sciatic nerve emerges, become spastic and pinch the nerve. This peripheral irritant is removed by anesthetization of the posterior sacral plexus, whose fibers emerge from the upper four sacral foramens to enter the multifidus to supply it with motor fibers. Relief of the ordinary case of sciatica ensues quite regularly in seven minutes when clocked, and as the pain vanishes muscle stiffness or spasm disappears and pain present in the hip joint or knee joint is relieved. In some cases there will be a tender spot over each of the upper four sacral foramens, each requiring an injection. In this region I use a 1 inch needle (preferably a B-D Huber point, which is much less painful to introduce) attached to an ordinary hypodermic syringe (I prefer a tuberculin syringe): the needle is boldly plunged through each tender spot up to its hilt so as to reach the multifidus and therefore the fibers of the posterior sacral plexus, and from 0.5 to 1 cc. of 2 per cent procaine is deposited for each spot.

The following case of sciatica in civilian practice exemplifies the suggested etiology and treatment:

H. F., a man aged 53, an electrical engineer, referred by Dr. Harry Goldblatt of the Western Reserve University Medical School, Cleveland, walked into the office with an obviously painful limp on the left side. He stated that on July 27, 1944 after a sudden, peculiar twist when lifting a 25 pound bag a pain was suddenly felt low in the back on the left side and became excruciatingly severe. Twenty-four hours after treatment by a physical therapist on August 25 pain began in the left sciatic nerve, and the left foot began to drag. His present (September 20) complaint is of pain in the left sciatic nerve, constant, stabbing and aching, not aggravated by coughing or sneezing. There is numbness of the foot from its sole up along the outer side of the left leg to about its middle, with partial foot-drop and inability to extend the toes. Wincing tenderness

is present over the left sacroiliac joint and over the posterior sacral foramens on the same side. The joint was injected with 1 cc. of 2 per cent procaine hydrochloride, as was each sacral wincing spot. Ten minutes later the patient could weakly extend the toes and walk without a limp, and he noticed that the numbness was leaving the foot, outer side first. Examination on the succeeding three days showed continued improvement and finally complete relief from all symptoms.

This situation can definitely be explained by assuming a minor strain of the sacroiliac joint as the peripheral irritant for spasm of the piriformis and obturator internus via the sacral plexus, squeezing between them the sciatic nerve and producing a full blown sciatica. Injection of the joint and wincing spots released the grip of the muscles on the nerve, with clearance of the symptoms and signs.

Of late I have been substituting this method for lumbar sympathetic plexus block in cases of vascular disturbances of the lower extremity, the results of which I shall report later.

I sincerely hope that these same results will be obtained in the hands of others: if so our boys with painful thigh stumps can avoid the formidable operations Dr. White (unwillingly, I am sure) finds it necessary to practice, while in civil practice the at times hazardous direct blocking of the sciatic nerve itself may be avoided.

P. G. SKILLERN, M.D., South Bend, Ind.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and of Examining Boards in Specialties were published in THE JOURNAL, Oct. 14, page 451.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, Oct. 24-26. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARKANSAS: * Little Rock, Nov. 9-10. Sec., Dr. D. L. Owens, Harrison.

CALIFORNIA: *Oral.* San Francisco, Nov. 15. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento 14.

CONNECTICUT: * *Medical. Written.* Hartford, Nov. 14-15. *Endorsement.* Hartford, Nov. 28. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, Nov. 14-15. Sec., Dr. J. H. Evans, Hartford 6.

DISTRICT OF COLUMBIA: * Washington, November. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 20-21. Sec., Dr. Harold D. Van Schaick, 2736 S.W. Seventh Ave., Miami 36.

IDAHO: Boise, Jan. 8-11. Dir., Bureau of Occupational Licenses, Mrs. Lela D. Painter, 355 State Capitol Bldg., Boise.

INDIANA: Indianapolis, Jan. 3-5. Exec. Sec., Board of Medical Registration and Examination, Miss Ruth V. Kirk, 301 State House, Indianapolis 4.

KANSAS: Nov. 2-3 Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

MAINE: Portland, Nov. 14-15. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MARYLAND: *Homeopathic.* Baltimore, Dec. 1-3. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 14-17. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston.

NEVADA: Carson City, Nov. 6. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NORTH DAKOTA: Grand Forks, Jan. 2-5. Sec., Dr. G. M. Williamson, 41½ S. 3rd St., Grand Forks.

SOUTH CAROLINA: Columbia, June 25-27. Sec., Dr. N. B. Heyward, 1329 Blandina St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 16-17. Sec., Medical Licensure, State Board of Health, Dr. G. Cottam, Pierre.

TEXAS: Dallas, Nov. 15-17 and Dec. 19-21. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.

VIRGINIA: Richmond, June 20-23. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WASHINGTON: * Seattle, Jan. 15-17. Dir., Department of Licenses, Mr. Thomas A. Swayze, Olympia.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARKANSAS: Little Rock, Oct. 30. Sec., Mr. L. E. Gebauer, 701 Main St., Little Rock.

COLORADO: Denver, Dec. 6-7. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 23-24. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

NEW MEXICO: Santa Fe, Feb. 12. Sec., Miss Marion M. Rhea, State Capitol, Santa Fe.

OREGON: Portland, Nov. 4. Sec., Mr. C. D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Nov. 15. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Aberdeen, Dec. 1-2. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Milwaukee, Dec. 2. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee 3.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals Not for Profit: State Unemployment Compensation Act Not Applicable to Charitable Hospital.—The Scripps Memorial Hospital, Inc., is a nonprofit organization, organized under the laws of the state of California, conducting a hospital, a metabolic clinic and a dietetic school. In accordance with the purposes for which it was founded, it treats persons regardless of race, creed or ability to pay, although it receives pay from about 75 per cent of the patients admitted, a full charge being made to patients with the ability to pay, a lesser charge being made in proportion to a patient's ability to pay and no charge being made if the patient is unable to pay. All sums received from the care of patients are used in the maintenance of the hospital and no profit from the hospital's operation has been used for any other purpose. Sometime subsequent to the adoption of the federal social security act appropriate federal officials ruled, in accordance with provisions in the law that authorize an exemption for such a corporation, that the corporation was exempt from the payment of the taxes required by title IX of that act (the title that was designed to aid the several states in the operation of systems of unemployment compensation) on the ground that the hospital corporation was exclusively organized and operated for charitable purposes and that no portion of its funds inures to the benefit of any private individual or shareholder. In 1936 the corporation was exempted also from the payment of taxes under the California unemployment compensation act by reason of section 7 (g) of that act, which exempts from the payment of taxes "a corporation, community chest, fund or foundation, organized and operated exclusively for religious, charitable, scientific, literary or educational purposes or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private shareholder or individual."

In 1941 the California employment commission revoked this exemption but granted an exemption under a section added in 1939 to the California unemployment compensation act, namely section 7 (k), which grants an exemption to a nonprofit organization, nonprofit safety organization, chamber of commerce, service club or fraternal organization not subject to a tax under title IX of the social security act. In March 1942 the commission revoked that exemption and the hospital corporation paid unemployment compensation taxes under protest. Subsequently it instituted three suits to recover the taxas so paid, all of which actions were consolidated for trial. The trial court held that the hospital was exempt from paying taxes under both sections 7 (g) and 7 (k) of the unemployment compensation act and entered a judgment for the corporation. The commission then appealed to the district court of appeals, fourth appellate district, which affirmed the judgment in favor of the

hospital (*Scripps Memorial Hospital, Inc.*, v. *California Employment Commission*, 143 P. (2d) 364). On further appeal the Supreme Court of California affirmed the judgment of the district court of appeal and adopted, in toto, as its decision the opinion rendered in the intermediate court.

The employment commission contended that the hospital corporation was not entitled to exemption as an organization exclusively organized and operated for charitable purposes because only a small part of its operations were purely charitable in the sense that they are services rendered gratuitously to persons that are unable to pay therefor. But, answered the court, it has generally been held that the fact that fees are charged by an institution such as the hospital here involved is not controlling if those fees go to pay the expenses of operation and not to the profit of the founders or shareholders. It is also usually held that it is immaterial that such an institution is supported in part by full pay or part pay patients and that it is the use to which any profit or income is devoted which is controlling. The court thought it clear that the hospital was intended to be included in the exemption provided in the unemployment compensation act.

In defining the phrase, continued the court, "operated exclusively for . . . charitable . . . purposes" as used in the act, in conformity with the purpose of the law makers, the context and surrounding provisions of that section should not be overlooked. Among the organizations which are to be exempted are community chests and funds or foundations which ordinarily include in their scope and operations many things aside from the relief of the poor and needy, in the strictest sense of the word charity. Again, the organizations to be exempted include also those organized and operated for religious, scientific, literary or educational purposes, and even those for the prevention of cruelty to children or animals. The wide and varied nature of the exemptions thus provided rather clearly indicates a purpose and intention to give the words here in question a broad rather than a strict meaning, and that it was intended, for exemption purposes, to apply the sort of standards to charitable institutions that are applied to the others named. In the broader meaning of charitable purposes the general principle usually applied in cases in this and other states is that such an institution as a hospital, in order to come within the meaning, must be one that is open to all persons irrespective of race, color, creed or ability to pay and must be one from which no individual or entity may benefit or profit from its operations or assets on dissolution. That the legislative purpose and intention in adopting the language used in the section under discussion were as we have suggested is also indicated by the fact that, although the employment commission had for some years thus interpreted this section, as shown by its exemption of the hospital through all those years, the legislature in extensively revising the unemployment compensation act in 1939 made no change in that regard but instead enlarged the scope of such exemptions by adding a new subsection 7 (k). That new section provided for an additional exemption with respect to nonprofit organizations, nonprofit safety organizations, chambers of commerce, service clubs and fraternal organizations which are not subject to tax under title IX of the social security act.

That this was the intention of the legislature, continued the court, is further indicated by the fact that this act was adopted as a part of a plan for a uniform system of unemployment compensation then proposed and later adopted by the federal government in practically all of the American states. The language used in section 7 (g), the section providing exemption for charitable organizations, is practically identical with that used in similar sections of the federal legislation and that of many states and is precisely similar to the language used in other federal statutes that have been in effect for many years. For that reason the interpretation placed on the language by the federal and other courts is unusually persuasive here. In passing on practically the same language in a case involving quite similar facts the Supreme Court of the United States in *Trinidad* v. *Sagrada, etc.*, 263 U. S. 578, 44 S. Ct. 204 said:

> The exceptions covered, among others, any corporation "organized and operated exclusively for religious, charitable, scientific or educational purposes, no part of the net income of which inures to the benefit of any private stockholder or individual. . . ."
>
> Two matters apparent on the face of the clause go far toward settling its meaning. First, it recognizes that a corporation may be organized and operated exclusively for religious, charitable, scientific or educational purposes and yet have a net income. Next, it says nothing about the source of the income but makes the destination the ultimate test of exemption. . . .
>
> That the transactions yield some profit is in the circumstances a negligible factor. Financial gain is not the end to which they are directed.
>
> Our conclusion is that the plaintiff is organized and operated exclusively for religious, charitable and educational purposes within the meaning of the excepting clause.

In passing on a similar question involving the same language as used in the New York unemployment compensation act, the court said *In re Mendelsohn*, 262 App. Div. 605, 31 N. Y. S. (2d) 435:

> The record shows that the hospital was organized exclusively for hospital purposes and is engaged exclusively in operating a hospital of a nonprofit character.
>
> That fees are charged by a university or hospital is not controlling as to its being a charity, for only when such income is devoted to the profit of the founders and not used to carry on the work by adding to the endowment, etc., does it show the institution is a business and not a charity. . . .
>
> "A hospital association not conducted for profit, which devotes all of its funds, including those received from patients, exclusively to the maintenance and improvement of the institution is, therefore, a charity in every sense of the word. . . ."
>
> Charitable purposes include nonprofit hospital corporations, organized and operated exclusively for hospital purposes irrespective of whether they charge their benefactors for their services and facilities.

The same interpretation has been given this or similar language in *Virginia Mason Hospital Ass'n* v. *Larson*, 114 P. (2d) 976, and *Commissioner of Internal Revenue* v. *Battle Creek*, 126 F. (2d) 405.

For the reasons stated the finding of the trial court that the hospital corporation was entitled to exemption from the payment of taxes under the unemployment compensation act was affirmed. —*Scripps Memorial Hospital, Inc., v. California Employment Commission, 151 P. (2d), 109 (Calif., 1944).*

Society Proceedings

COMING MEETINGS

American Academy of Pediatrics, St. Louis, Nov. 9-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

Annual Conference of State Secretaries and Editors, Chicago, Nov. 17-18. Dr. Olin West, 535 N. Dearborn St., Chicago, Secretary.

Association of American Medical Colleges, Detroit, Oct. 23-25. Dr. Fred C. Zapffe, 5 S. Wabash Ave., Chicago, Secretary.

Association of Military Surgeons of the United States, New York, Nov. 2-4, Col. James M. Phalen, Army Medical Museum, Washington 25, D. C., Secretary.

Central Neuropsychiatric Association, Chicago, October 31. Dr. Ernest M. Hammes, 1124 Lowry Medical Arts Bldg., St. Paul 2, Minn., President.

Central Society for Clinical Research, Chicago, Nov. 3-4. Dr. Carl V. Moore, 602 S. Euclid Ave., St. Louis 10, Secretary.

Midwestern Section of American Federation for Clinical Research, Chicago, Nov. 2. Dr. Richard H. Lyons, University Hospital, Ann Arbor, Mich., Secretary.

Oklahoma City Clinical Society, Oklahoma City, Oct. 23-26. Dr. L. C. McHenry, 512 Medical Arts Bldg., Oklahoma City, Secretary.

Omaha Mid-West Clinical Society, Omaha, Nebraska, Oct. 23-27. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha 2, Secretary.

Puerto Rico, Medical Association of, Santurce, Dec. 15-17. Dr. E. Martinez-Rivera, P. O. Box 3866, Santurce, Secretary.

Southern Medical Association, St. Louis, Mo., Nov. 13-16. Mr. C. P. Loranz, Empire Building, Birmingham 3, Ala., Secretary.

Virginia, Medical Society of, Richmond, Oct. 23-25. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond 19, Secretary.

Western Surgical Association, Chicago, Dec. 1-2. Dr. Arthur R. Metz, 250 East Superior St., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Fort Wayne, Ind.

11:241-270 (Aug.) 1944

Relationship Between Lymphoblastic Tumor and Digestive Tract. J. Borak.—p. 241.
On Absorption of Iron. V. E. Henderson and G. H. W. Lucas.—p. 244.
Neurotic Patient. Discussion of Causes and Treatment of Neurosis. H. Gauss.—p. 248.
Dysentery in American Troops in Middle East. C. W. Wirts Jr. and E. J. Tallant.—p. 252.
Chronic Constipation. H. W. Soper.—p. 255.
Constipation: Further Clinical Evidence of Use of Bran as Dietary Laxative Agent. M. H. Streicher and Lucille Quirk.—p. 259.
Fat Metabolism. H. M. Feinblatt.—p. 260.
Role of Fat Soluble Vitamins A and D in Nutrition. J. Buckstein. —p. 261.

American Journal of Diseases of Children, Chicago

68:1-82 (July) 1944

*Relationship of Tonsils and Adenoids to Type of Poliomyelitis: Analysis of 432 Cases. P. F. Lucchesi and A. C. LaBoccetta.—p. 1.
*Sulfadiazine in Treatment of Diarrhea in Children. F. J. Menchaca. —p. 5.
Thumb and Finger Sucking in Relation to Feeding in Early Infancy. E. Roberts.—p. 7.
*Poisoning Due to Lye: Value of Bokay Prophylactic Dilation in Prevention of Early Strictures of Esophagus. J. T. Crowe.—p. 9.
Study of Personalities of Children with Diabetes. Winifred C. Loughlin and H. O. Mosenthal.—p. 13.
Basal Blood Pressure and Pulse Rate in Adolescents. N. W. Shock. —p. 16.
Effects of Repeated Use of Sulfadiazine for Recurring Acute Infections of Respiratory Tract. M. Siegel.—p. 23.

Relationship of Tonsils and Adenoids to Poliomyelitis.—Lucchesi and LaBoccetta investigated the question of whether the presence or absence of tonsils has any relationship to the type or mortality of poliomyelitis. The material for the study included 432 patients admitted to the Philadelphia Hospital for Contagious Diseases with diagnosis of acute anterior poliomyelitis from 1937 to 1942 inclusive. The authors apply the term "spinal poliomyelitis" to designate the condition in which only the spinal cord is involved. The term "bulbar poliomyelitis" is used when cranial nerves alone are involved. The condition in which both the cranial nerves and the spinal cord are involved is classified as "bulbospinal poliomyelitis." There were 19 patients under 6 years of age who had had their tonsils and adenoids removed, and 8 of these children had bulbar involvement. Of 161 patients in the nonadenoidotonsillectomized group under 6 years of age only 13 had bulbar involvement. Eighteen of 432 patients died. Of these 3 had bulbar, 5 had spinal and 10 had bulbospinal poliomeningitis. Fourteen of the patients who died had had tonsillectomy and adenoidectomy. The authors analyze the types of poliomyelitis occurring in 164 adenoidotonsillectomized patients and in 263 patients with intact tonsils and adenoids. Over 76 per cent of the patients with bulbar poliomyelitis and 61 per cent of those with bulbospinal poliomyelitis had had an adenoidotonsillectomy, while only 30.9 per cent of the patients with only spinal involvement had had their tonsils and adenoids removed. Nonparalytic poliomyelitis occurred in about equal proportions in the two groups. The consistency of the data adds weight to the belief that a positive correlation exists between absence of pharyngeal lymphoid tissue and involvement of the higher centers in poliomyelitis. Some believe that an adenoidotonsillectomy must occur within the incubation period of the disease in order to have any effect on the course of the illness. The evidence presented here suggests that the absence of tonsils and adenoids increases the risk of bulbar and bulbospinal involvement in persons with poliomyelitis. Consequently the indiscriminate removal of tonsils and adenoids should not be condoned.

Sulfadiazine in Diarrhea in Children.—Menchaca employed sulfadiazine in infantile diarrhea. Most of his patients had severe or moderate diarrhea that had not improved under treatment in outpatient clinics. Injections of isotonic solution of sodium chloride with dextrose were given, and isotonic solution of three chlorides with 3 per cent dextrimaltose was administered by mouth. The diet consisted of either buttermilk with dextrimaltose or human milk. Only 2 patients received plasma, and the use of antidiarrheics was avoided. A total of 0.1 to 0.15 Gm. of sulfadiazine per kilogram of body weight was given daily in four doses six hours apart. From observations on 20 children the author concludes that this drug is an efficacious aid in the treatment of infantile diarrhea.

Prophylactic Dilation for Strictures of Esophagus from Lye.—According to Crowe, corrosive burns of the esophagus constitute one of the most difficult problems in pediatric practice. He analyzes 57 cases of ingestion of caustic alkali. The first aid given is generally poor. Patients with early poisoning due to lye can be saved secondary stenosis of the esophagus by the use of Bokay prophylactic esophageal dilation. This treatment should be used for every patient who has swallowed alkali unless there is definite pharyngoscopic proof that the esophagus is undamaged. If the presence of oral burns or the conditions revealed by fluoroscopy or pharyngoscopy indicate that the esophagus has been damaged even slightly, an eyeless (Bokay) catheter size 10 to 30 (French) which has been filled with lead shot or mercury, tied off at the open end and wet with water or with lubricating jelly, should be gently passed down the child's esophagus and left in place for five minutes once daily, starting on the third day after the child swallows the lye or as near that time as possible. The catheter should not be forced but allowed to pass by weight of the shot or mercury contained in it. During the first few days the size of the catheter should be increased until difficulty is encountered in passing it. From the third to the tenth week the largest possible catheter should be passed once daily and kept in place for ten to thirty minutes. The catheter should be introduced twice a week for the next month and then once a week for at least three months; then the interval can be lengthened to suit the patient's condition. Only 13 of the patients were seen in a sufficiently early stage so that Bokay prophylactic therapy could be used. In the 9 patients for whom Bokay therapy was adequate no strictures of the esophagus occurred. In 4 children the treatment at home was not sufficiently prolonged and strictures developed, necessitating a second admission to the hospital for gastrostomy and bougienage. Strictures developed also in 44 children who did not have Bokay treatment. All the patients with strictures required one of the following types of treatment: (1) peroral esophagoscopic bougienage, (2) retrograde bougienage through an artificial gastric fistula or (3) peroral bougienage with a silk thread used as a guide, procedures which involve long hospitalization (an average of fifty-six days), inconvenience, expense and the possibility of death from surgical causes. Four of the 48 patients died.

American Journal of Hygiene, Baltimore

40:1-108 (July) 1944

*Propagation of Yellow Fever Virus in Tissue Cultures Containing Sulfonamides. H. Koprowski and E. H. Lennette.—p. 1.
*Sulfonamides in Yellow Fever Virus Infections of Mice and Developing Chick Embryos. H. Koprowski and E. H. Lennette.—p. 14.
Nuclei in Avian Malaria Parasites: I. Structure of Nuclei in Plasmodium Elongatum with Some Considerations on Technic. T. T. Chen. —p. 26.
Jaundice in Army Personnel in Western Region of United States and Its Relation to Vaccination Against Yellow Fever (Parts II, III and IV). W. A. Sawyer, K. F. Meyer, M. D. Eaton, J. H. Bauer, P. Putnam and F. F. Schwentker.—p. 35.

Sulfonamides and Yellow Fever in Cultures.—Koprowski and Lennette cultivated the 17DD High substrain of yellow fever in tissue culture in the presence of maximal concentrations of sulfapyridine or sulfathiazole. No evidence was obtained that

either of these drugs interferes with the propagation of the virus. No changes in the infectivity of the virus for mice were noted after fifty passages in tissue culture medium containing sulfapyridine.

Sulfonamides in Yellow Fever of Mice and Chick Embryos.—Koprowski and Lennette found that sulfapyridine and sulfathiazole administered orally or parenterally and sodium sulfapyridine administered parenterally had no demonstrable prophylactic or therapeutic effect on mice infected with yellow fever virus. Sodium sulfapyridine administered by way of the chorioallantoic membrane had no effect on the course of the infection produced in the chick embryo inoculated on the membrane with virus prior to or after administration of the drug.

American Journal of Ophthalmology, Cincinnati

27:803-932 (Aug.) 1944

Type of Foveomacular Retinitis Observed in U. S. Navy. F. C. Cordes. —p. 803.
Choice of Fixating Eye in Paralytic and Nonparalytic Strabismus. J. W. White.—p. 817.
Exophthalmos of Hyperthyroidism: Differentiation in Mechanism, Pathology, Symptomatology and Treatment of Two Varieties: Part III. J. H. Mulvany.—p. 820.
Inclusion Blennorrhea. J. H. Allen.—p. 833.
Etiology and Treatment of Tobacco-Alcohol Amblyopia: Part II. F. D. Carroll.—p. 847.
X-Ray Treatment of Thrombosis of Retinal Vein and of Several Types of Iridocyclitis. R. J. Hessberg.—p. 864.
Almost Complete Retinal Detachment After Cataract Extraction: Complete Reattachment After Glaucoma Attack. F. Nelson.—p. 876.

American Journal of Public Health, New York

34:817-930 (Aug.) 1944

Cooperative Health Program of American Republics. G. C. Dunham. —p. 817.
Wartime Nutrition in England as Public Health Problem. H. M. Sinclair.—p. 828.
Staphylococcus and Streptococcus Carriers: Sources of Food Borne Outbreaks in War Industry. V. A. Getting, A. D. Rubenstein and G. E. Foley.—p. 833.
Salmonellosis as Public Health Problem in Wartime. A. D. Rubenstein, R. F. Feemster and Helen M. Smith.—p. 841.
Food Poisoning Caused by Hemolytic Staphylococcus in Defense Plant. B. J. Slater and J. L. Norris.—p. 854.
Housing Health Department—Experiment in Rural Oklahoma. Gertrude Nielsen and H. L. Kamphoefner.—p. 857.
Automatically Controlled Suction Device for Field Air Sampling. A. Setterlind.—p. 863.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

52:1-122 (July) 1944

Osseous Metastases from Graded Cancers of Breast, with Particular Reference to Roentgen Treatment. H. A. Burch.—p. 1.
Some Experiences in Treatment of Bronchial Cancer. W. L. Mattick. —p. 24.
Cardiac Aneurysm. P. J. Delano and A. R. Weihe.—p. 31.
*Tuberous Sclerosis. M. D. Sachs and D. A. Shaskan.—p. 35.
Roentgenologic Diagnosis of Peptic Ulcer of Esophagus. F. J. Lust and A. R. Peskin.—p. 40.
Normal Distribution of Small Intestine. S. T. Herstone and S. Freund. —p. 46.
Position of Small Intestine as Determined Roentgenographically. M. H. Poppel and S. T. Herstone.—p. 52.
Spinal Extradural Cyst (Diverticulum of Spinal Arachnoid): Report of Case. C. A. Good, A. W. Adson and K. H. Abbott.—p. 53.
Roentgen Interpretation of Pathology in Pott's Disease. O. Auerbach and Marguerite G. Stemmerman.—p. 57.
*"Ring" Sequestrums as Complication of Fixed Skeletal Traction. C. P. Truog.—p. 64.
Osteoid-Osteoma: Review of Portions of Literature and Presentation of Cases. R. W. Lewis.—p. 70.
Pancreatic Cyst and Lithiasis: Classification and Incidence; Report of Pseudocyst Associated with Disseminated Parenchymal Calcification. L. M. Pascucci.—p. 80.

Tuberous Sclerosis.—According to Sachs and Shaskan tuberous sclerosis is a rare hereditary disease of ectodermal origin. Tuberous sclerosis, Recklinghausen's neurofibromatosis and trigeminal nevus with angioma of the brain are distinct types of neurocutaneous syndromes. Of the three, tuberous sclerosis presents the most clearcut clinical, roentgenologic and pathologic picture. It is most frequently associated with mental retardation and epileptic seizures. The authors describe a case of tuberous sclerosis in a white soldier aged 32. The cardinal findings in this case with a history of epileptic seizures were adenoma sebaceum, fibromatous nodules on the forehead, scalp and back, pigmented hairy nevus of the lumbar area, vitiligo of the left thigh and back, phacoma of the retina, and "cotton ball" calcifications of the brain, right greater trochanter and fifth lumbar vertebra. The authors think that delay in the diagnosis of tuberculous sclerosis is probably due to the physician's unfamiliarity with the syndrome because of relative scarcity.

"Ring" Sequestrums as Complication of Fixed Skeletal Traction.—Truog points out that a complication which occurs not uncommonly with skeletal traction is the formation of "ring" sequestrum. He has observed 7 such cases at an orthopedic clinic. Six of the patients were treated with pins incorporated in plaster casts which extended from the toes to above the knees with about 15 degrees flexion at the knees. They then became ambulatory and were seen in the outpatient clinic. Five of these 6 patients had pins inserted through the upper tibial fragment and the calcaneus; one had a pin driven through the distal fragment as well as the proximal fragment. These 6 all had delayed union. The seventh patient was treated with the Kirschner wire extension. He had a fracture of the femur and humerus and of the tibia and fibula. Nonunion developed in both the femur and the tibia necessitating bone grafts. Roentgenologists should give special attention to such cases, as the diagnosis will depend entirely on the roentgen examination. It is important to make the diagnosis as soon as possible so that the skeletal traction may be removed. Constant traction under these conditions may lead to extensive bone damage or to migration of the pin out of the bone into soft tissue, epiphyses or joints. The cause is probably pressure necrosis plus a low grade infection.

Annals of Internal Medicine, Lancaster, Pa.

21:1-172 (July) 1944

Great Need for Internists in Naval Medical Program. R. T. McIntire. —p. 1.
Demerol: New Synthetic Analgetic, Spasmolytic and Sedative Agent: I. Pharmacologic Studies. F. F. Yonkman, P. H. Noth and H. H. Hecht.—p. 7.
Id.: II. Clinical Observations. P. H. Noth, H. H. Hecht and F. F. Yonkman.—p. 17.
Serum Amylase in Mumps. I. L. Applebaum.—p. 35.
Rheumatic Fever: Diet as Predisposing Factor. D. C. Peete.—p. 44.
Short PR Interval Associated with Prolongation of QRS Complex: Clinical Study Demonstrating Interesting Variations. O. A. Palatucci and J. E. Knighton.—p. 58.
I. Treatment of Experimentally Produced Staphylococcal Thoracic Empyema. W. E. Evans Jr., J. G. McAlpine, B. Skitarelic and E. H. Tonolla.—p. 70.
Spontaneous Complete Rupture of Aorta without Dissecting Aneurysm, with Report of Case Showing New Physical Sign (Periaortic Friction Rub). F. R. Taylor and R. P. Morehead.—p. 81.
Evaluation of Dark Test. P. H. Wosika.—p. 101.
Effect of Certain Antacids in Man Measured by Simplified Method for Continuous Recording of Gastric pH. N. E. Rossett and J. Flexner. —p. 119.

Clinical Observations with Isonipecaine.—Noth and his associates made observations on the effect of isonipecaine on 146 patients, 118 of whom were suffering pain severe enough to justify the use of one of the opiates. The customary dose was 100 mg. given orally or intramuscularly. The drug was administered in 123 instances of severe pain to 118 patients (5 patients had two types of pain). Complete relief was obtained in 79, partial relief in 29 and no relief in 15 instances. The onset of relief was from five to twenty minutes following intramuscular injection and from twenty to thirty minutes following oral administration. Its duration varied between one and six hours but was usually three or four hours. Relief was more often complete following intramuscular injection. The analgetic potency of isonipecaine in the dose employed was greater than that of 1 grain (0.06 Gm.) or more of codeine or combinations of codeine and acetylsalicylic acid. It was usually less than that of morphine in ¼ or ⅓ grain (0.016 or 0.01 Gm.) doses. The sedative action of isonipecaine was studied in the group of 81 patients with pain and in 24 patients without pain. The group of patients with pain received, as a rule, only a few doses of isonipecaine. Its administration was followed by sleep in about 50 per cent, by mild sedation in about 30 per cent and by no noticeable sedative effect in about 20 per cent of instances. The hypnotic or sedative effects following repeated administration were not profound, a fact which was of advantage in the treatment of

patients with chronic painful diseases. Three of 4 patients suffering from status asthmaticus were benefited by isonipecaine. Side effects were noted by 40 of the 146 patients, but in only 7 was it necessary to stop the drug. Laboratory studies showed no changes which could be attributed to it. In 9 of 21 patients who had received isonipecaine for varying periods of time the withdrawal of the drug and the substitution of one of the opiates were followed by certain undesirable symptoms. Isonipecaine is an effective analgetic drug which is relatively nontoxic. It may possess addictive properties, but these are apparently not as severe as those of some of the opiates. Isonipecaine is capable of replacing these drugs for a great number of painful conditions.

Annals of Surgery, Philadelphia

120:1-128 (July) 1944

Treatment of Air Force Combat Casualties. W. F. MacFee.—p. 1.
Whole-Upper Extremity Transplant for Human Beings: General Plans of Procedure and Operative Technic. R. H. Hall.—p. 12.
Studies on Effects of Posture in Shock and Injury. G. W. Duncan, S. J. Sarnoff and C. M. Rhode.—p. 24.
Operation for Aneurysm of Heart. C. S. Beck.—p. 34.
Infected Dissecting Aneurysm of Iliac Artery Following Arteriovenous Fistula of Femoral Vessels. H. Neuhof.—p. 41.
Ligation of Abdominal Aorta: Case Report. J. K. Ormond, H. N. Harkins and F. J. Smith.—p. 49.
Surgical Aspects of Pancreatic Fistula. T. B. Wiper and J. M. Miller.—p. 52.
Primary Gastric Resection for Perforated Gastroduodenal Ulcers. A. Strauss.—p. 60.
Atresia of Small Intestine: Two Case Reports; One Multiple Atresia with Survival. W. H. Erb and D. C. Smith.—p. 66.
*Cauda Equina Compression Syndrome with Herniated Nucleus Pulposus: Report of 8 Cases. J. D. French and J. T. Payne.—p. 73.
Lumbosacral Roentgenograms of 450 Consecutive Applicants for Heavy Work. L. W. Breck, J. W. Hillsman and W. C. Basom.—p. 88.
Comparative Values of Various Methods of Resuscitation. S. A. Thompson.—p. 94.
*Studies on Surgical Convalescence: I. Sources of Nitrogen Loss Post-gastrectomy and Effect of High Amino Acid and High Caloric Intake on Convalescence. Co Tui, A. M. Wright, J. H. Mulholland, V. Carabba, I. Barcham and V. J. Vinci.—p. 99.

Cauda Equina Compression Syndrome with Herniated Nucleus Pulposus.—French and Payne observed a number of instances in which the protrusions of nucleus pulposus were so extensive as to produce complete, or nearly complete, subarachnoid block with cauda equina compression. The resultant symptoms so closely simulate cauda equina tumors that in most of the early cases exploration was done for suspected neoplasms. The authors gained the impression that cauda equina compression occurs much more frequently as the result of herniated nucleus pulposus as of tumor. They present 8 cases of cauda equina compression due to herniated nucleus pulposus. These cases were proved by myelography and operation. The pathologic process was encountered at the third lumbar in 1 case, at the fourth lumbar in 4 cases and at the fifth lumbar in 3 cases. There is considerable similarity in the symptom complex presented by these patients. Their main complaints were pain in the back and both legs, numbness in the saddle area and/or both legs, weakness and sphincter disturbances. There is usually a long antecedent history of back pain followed by an acute episode of rapid progression of the symptoms. The predominant symptoms were weakness or atrophy in the gluteal region or both legs, sensory changes in both legs, multiple reflex changes and sphincter abnormalities. Narrowed interspace determined by x-ray was frequently present and of differential diagnostic importance when found. Increased spinal fluid protein was the rule. Myelography showed complete or nearly complete subarachnoid block in all cases. The difficulty in differentiating this clinical entity from cauda equina tumor preoperatively is apparent.

Nitrogen Loss After Gastrectomy.—Co Tui and his associates reported in a preliminary communication that patients convalescing from gastrectomy, when fed with a high caloric and high amino acid diet (nutramigen), were able to maintain a consistently positive nitrogen balance throughout the postoperative period, to register a rise in body weight and to achieve an early return of strength and a significantly shortened convalescence. This picture was in contrast to that of a similar group of postoperative patients under the classic postoperative ward regimen, who had a consistently negative nitrogen balance, a loss of body weight, a longer period of postoperative debility and a more prolonged stay in bed. The authors now report the results of treating a group of 19 patients, 8 of whom were on routine ward regimen, 8 were fed high caloric and high amino acid mixture, and 3 were fed in sufficient quantities to maintain nitrogen equilibrium. Under the classic ward regimen there was a consistent nitrogen deficit and loss of weight and a prolonged stay in bed. Objective ergography also showed postoperative asthenia, which had not disappeared on the twelfth postoperative day. In those fed with high caloric and high amino acid mixtures there was a consistent nitrogen surplus, a steady gain in weight and a stay in bed of less than one-half that of the control series. The ergograph showed an early return of endurance. The principal cause of nitrogen loss in postgastrectomy convalescence was the starvation postoperative regimen. The nitrogen loss resulting from the gastric suction was considerable. It was correctable by feeding an early assimilable high amino acid mixture. A hyperalimentation regimen consisting of high caloric and high amino acid feeding postoperatively has been worked out and found practical and is recommended in gastrectomy in order to circumvent nitrogen loss, shorten convalescence and prevent postoperative asthenia.

Archives of Neurology and Psychiatry, Chicago

52:1-86 (July) 1944

Lesion in Peripheral Nerve Resulting from Compression by Spring Clip. D. Denny-Brown and C. Brenner.—p. 1.
Dystonia: III. Pathology and Conclusions. E. Herz.—p. 20.
Cerebral Thromboangiitis Obliterans: Histogenesis of Early Lesions. I. M. Scheinker.—p. 27.
Electroencephalogram of Criminals: Analysis of 411 Cases. D. Silverman.—p. 38.
Vasoparalysis of Central Nervous System, Characteristic Vascular Syndrome: Significance in Pathology of Central Nervous System. I. M. Scheinker.—p. 43.
Synthesis of Hippuric Acid in Dementia Precox. S. T. Michael, J. M. Looney and E. J. Borkovic.—p. 57.
Abolition of Bulbocapnine Catalepsy in Cat by AC-Tetrahydro-B-Naphthylamine. E. F. Kerman.—p. 61.
Histamine Content of Blood During Insulin Shock Therapy. O. Billig and F. H. Hesser.—p. 65.

Archives of Otolaryngology, Chicago

40:1-74 (July) 1944

Intracranial Suppuration Secondary to Disease of Nasal Septum: Survey of Literature; Report of Cases and Animal Experiments. L. K. Rosenvold.—p. 1.
Chemotherapy and Biotherapy: Their Relation to Prevention and Treatment of Diseases of Ear, Nose and Throat. J. A. Kolmer.—p. 17.
Modern View of Neuralgia Referable to Meckel's Ganglion: Report of Cases Showing Relief of Pain and Sometimes Arrest of Development of Ulcers of Cornea by Cocainization of Ganglion. B. R. Dysart.—p. 29.
Thrombosis of Cavernous Sinus with Hemolytic Streptococcic Bacteremia: Treatment by Intravenous Injection of Sulfadiazine and Penicillin with Recovery. J. W. Wolf.—p. 33.
*Present Status of Diagnosis and Management of Ménière's Syndrome. H. Brunner.—p. 38.
Absorptive Capacity of Nose. M. Saltzman.—p. 44.
Cancer of Trachea: Report of 5 Cases. G. E. Fisher.—p. 49.
Prevention of Traumatic Deafness: Further Studies. W. H. Wilson.—p. 52.
Modification of Blade of LaForce Tonsillectome. F. E. Keller.—p. 59.

Ménière's Syndrome.—According to recent studies, Ménière's syndrome is due to an acute increase of fluid within the internal ear, particularly within the endolymphatic canal of the inferior part of the internal ear. These changes are called "hydrolabyrinth" to emphasize the similarity to hydrocephalus. The symptoms of Ménière's syndrome are due to acute hydrolabyrinth, which may resolve without injury to the internal ear or may lead to fixed dilatation of the inferior part of the internal ear and gradual or acute destruction of the sensorial cells. The typical Ménière attack consists of tinnitus, diminution of hearing, labyrinthine vertigo and spontaneous nystagmus. Only vertigo of the type which can be produced by the usual clinical methods of examining the labyrinth should be considered as labyrinthine. Spontaneous nystagmus between Ménière attacks is not of labyrinthine origin; it indicates an organic disease in the posterior cranial fossa. If the attacks consist only of labyrinthine or only of cochlear symptoms, a definite diagnosis cannot be made. If there is a systemic, cerebral or aural cause the symptom complex is

called "symptomatic Mènière's syndrome." When no etiologic factor can be determined, the disease is designated "idiopathic Ménière's syndrome." The pathologic changes are apparently the same in the two cases. The metabolic theory of the causation of the disease is not supported by microscopic observation, by chemical examination of the blood or by treatment. The vascular theory is supported by microscopic observation of the human ear as well as by experiment and explains the pathologic picture of the idiopathic as well as the symptomatic Ménière's syndrome. Most frequently the angioneurotic disturbances within the internal ear are due to arteriosclerosis of the brain. Various types of leukemia, syphilis, influenza, malaria, virus infection and particularly focal infection may cause the symptomatic Ménière's syndrome. Allergy is occasionally but not frequently a cause. A chronic adhesive process of the tympanic cavity frequently causes symptomatic Ménière syndrome. When Ménière's syndrome is symptomatic, the etiologic disease should be treated. Treatment of the idiopathic type of Ménière's disease is difficult. Atkinson has recommended nicotinic acid on the ground that it is a vasodilator. The author employs symptomatic treatment, which is not always successful. Surgical treatment is justified only if the diagnosis of Ménière's syndrome is certain, if conservative measures have been exhausted and if the disease is progressive on one side while the other ear is normal.

Archives of Pathology, Chicago

38:1-62 (July) 1944

*Infantile Toxoplasmosis; with Report of 3 New Cases, Including 2 in which Patients Were Identical Twins. W. W. Zuelzer.—p. 1.

Parathyropituitary Syndrome: Pituitary Dysfunction and "Primary" Hyperparathyroidism. R. M. Perlman.—p. 20.

Protein as Oxidase. M. H. Fischer and W. J. Suer.—p. 28.

Morphologic and Histochemical Study of Effect of Scurvy on Tuberculosis in Guinea Pigs and of Origin, Amount and Distribution of Alkaline Phosphatase in Foci of Caseous Necrosis. W. O. Russell, J. A. Read and E. T. Rouse.—p. 31.

Histochemical Study of Effect of Scurvy on Activity of Alkaline Phosphatase in Kidneys of Guinea Pigs. W. O. Russell, E. T. Rouse and J. A. Read.—p. 40.

Spontaneous Arteriosclerosis in Chickens. D. V. Dauber.—p. 46.

Incidence of Mammary Carcinoma in Mice Treated with Estrogen: Effect of Age at Which Treatment with Estrogen Begins. L. Loeb, V. Suntzeff, E. L. Burns and I. R. Schenken.—p. 52.

Infantile Toxoplasmosis.—The number of reported cases of human toxoplasmosis, according to Zuelzer, totals 32. He reports 3 new cases. The first patient was a white boy who died on the third day of hospitalization when 11 days old. The second patient was a Negro infant, 1 of identical twin boys, who died when 1 month old. Complete necropsy reports are given of these 2 patients. The third patient, the identical twin brother of the second patient, is alive and has been under observation from birth to the present age of 7 months. Although in infants toxoplasmosis has a predilection for the central nervous system, the infection passes through a generalized stage in which many organs may be involved. The relative effect of toxoplasmosis on the central nervous system is magnified in later stages by the permanent character of the residual lesions, owing to the inability of nerve cells to regenerate, while lesions in other organs may heal with little or no residue. The disease may produce variable combinations of clinical and pathologic abnormalities. The parasites of toxoplasmosis invade tissue cells, in which they multiply, causing gradual loss of the characteristic cell structure and producing the appearance of cysts. The intracellular aggregate of toxoplasmas does not seem to produce a reaction in the tissue as long as the membrane of the host cell remains intact. Single parasites set free by rupture of a host cell or on their way from vessels to cells produce an inflammatory response. An equilibrium between host tissues and parasites may be established, leading to persistence of intact intracellular aggregates of toxoplasmas in normal tissues. The demonstration of the disease in twins, together with the presence of neutralizing antibodies in the maternal serum and the chronic character of most of the lesions observed in the twin who died of the disease at the age of 1 month, constitutes new evidence for the occurrence of prenatal infections with toxoplasma. One patient dying at the age of 11 days had an acute generalized toxoplasmic infection. Lesions were found in many organs, among these the testicles, the pancreas and the kidneys, in which the infection has not been reported until now. The renal lesion consisted of focal glomerulonephritis. Generally the changes resembled those in acute toxoplasmosis of adults. The absence of demonstrable antibodies in the maternal serum indicates that the infection in this infant was acquired after birth and suggests that even early infantile toxoplasmosis is not always necessarily congenital. The clinical onset of the disease in the first few weeks of life is not in itself adequate proof of its prenatal inception. In the twins icterus accompanied the toxoplasmic infection. Icterus does not seem to be a common feature of the disease. Among 21 previously reported cases this symptom was present in only 3 instances. Analysis of the character of the icterus in the twins and of the underlying changes in the liver in the one who died does not support a causal relation to the toxoplasmic infection. Hepatosplenomegaly and extramedullary hemopoiesis in the spleen, the liver and other organs are genuine manifestations of toxoplasmosis of newborn and young infants.

Arkansas Medical Society Journal, Fort Smith

41:43-58 (July) 1944

Tuberculosis Control in Arkansas. A. C. Curtis.—p. 43.

41:59-78 (Aug.) 1944

Continuous Caudal Analgesia in Obstetrics. I. Fulton Jones.—p. 59.

Suggested Health Program for Schools for Blind. F. W. Harris.—p. 62.

Bulletin of Los Angeles Neurological Society

9:1-120 (March-June) 1944

Some Notes on History of Injury to Skull and Brain. C. B. Courville. —p. 1.

Structural Basis for Common Traumatic Cerebral Syndromes. C. B. Courville.—p. 17.

Disturbances of Cerebral Physiology Following Certain Types of Craniocerebral Injuries. R. B. Raney and A. A. Raney.—p. 28.

Electroencephalographic Changes Due to Cerebral Trauma. C. Marsh. —p. 38.

Concussion of Brain: Clinical and Experimental Observations. C. W. Olsen.—p. 46.

Aphasia Due to Cerebral Trauma. J. M. Nielsen.—p. 52.

Head Injuries in Relation to Psychoneurotic Symptoms and Personality Changes. S. D. Ingham.—p. 61.

Psychiatric Syndromes Due to Head Injury: Observations on 174 Cases from Los Angeles County Psychopathic Hospital. G. N. Thompson and J. E. McGinnis.—p. 65.

Interval Syndrome, with Some Comments on Its Causal Traumatic Lesions. R. S. Knighton.—p. 72.

Post-Traumatic Epilepsy: Some Observations as to Its Pathogenesis and Treatment. C. Marsh.—p. 79.

Traumatic Abscess of Brain: Survey of Recent Literature and Report of 9 Cases. H. M. Cuneo.—p. 87.

Subdural Neomembrane Following Head Injury: Report of 2 Cases. W. T. Grant.—p. 94.

Surgical Experiences with War Wounds of Skull and Brain: Relating Surgical Experiences of Operating Team No. 578 and Subsequent Reflections. C. W. Rand.—p. 101.

Penetrating Wounds of Skull: Some Therapeutic Considerations. G. H. Patterson.—p. 106.

*Repair of Traumatic Cranial Defects: Some Experiences with Tantalum. D. L. Reeves.—p. 112.

Tantalum in Repair of Traumatic Cranial Defects.—Reeves states that, until the more recent use of vitallium and tantalum, materials other than autogenic bone grafts for the repair of cranial defects had been generally discredited. Tantalum is a bluish white metal, which has proved a satisfactory alloplastic material for the repair of peripheral nerves and cranial defects. The tantalum plates retain their original luster and show no signs of corrosion. No inflammatory reaction leading to extrusion or necessitating removal of the plates occurs. Because of its malleability the flat tantalum sheet can be cut to fit the defect with tin shears or heavy surgical scissors and then hammered or bent to the desired contour. By means of preoperative impressions, molds and models the tantalum sheet can be contoured accurately to fit the cranial defect and still be adjusted at the operating table. The accurately fitted plate is fastened to the bone with tantalum wire through perforations made along the edge of the plate. In the past year tantalum wire and foil have been used increasingly in the repair of peripheral nerves and the plates for the closure of large and difficult defects with very satisfactory results. The author describes 2 cases which illustrate the value of tantalum in the repair of cranial defects.

Cancer Research, Baltimore

4:465-528 (Aug.) 1944. **Partial Index**

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Oxidative Response of Normal and Neoplastic Tissues to Succinate and to p-Phenylenediamine. O. Rosenthal and D. L. Drabkin.—p. 487.
Action of Heptanal Sodium Bisulfite Methylsalicylate and of 2,4,6-Trimethylpyridine on Tissue Cultures of Human and Mouse Carcinoma and Rat Lymphosarcoma. Gladys Cameron, C. J. Kensler and R. Chambers.—p. 495.
Retarding Effect of Glyceraldehyde on Benzpyrene Sarcoma Formation in Mice. J. F. Riley and F. Pettigrew.—p. 502.
Multiple Primary Tumors in Dogs. R. M. Mulligan.—p. 505.
Antifibromatogenic Effects Produced by Intermittent Action of Progesterone. R. Iglesias, A. Lipschütz and G. Nieto.—p. 510.
Inactivation of Antifibromatogenic Substances (Progesterone and Desoxycorticosterone Acetate) in Liver. Christiane Dosne.—p. 512.
Experimental Study of Lateral Spread of Epidermoid (Squamous Cells) Carcinoma in Man and Reaction of Such Lesion to Wound Healing Stimulus. A. Brunschwig and T. F. Thornton Jr.—p. 515.

Endocrinology, Springfield, Ill.

35:73-138 (Aug.) 1944

Biochemical Effects of Sex Hormones. Acid and Alkaline Phosphatase Activity, Calcium and Phosphorus. K. W. Buchwald and Leona Hudson.—p. 73.
Effect of Some Androgenic Steroids on Adrenal Cortex of Hypophysectomized Rats. S. L. Leonard.—p. 83.
Effect of Pure Adrenocorticotropic Hormone on Work Performance of Hypophysectomized Rats. D. J. Ingle, C. H. Li and H. M. Evans.—p. 91.
Sensitivity of Reproductive System of Hypophysectomized 40 Day Male Rats to Gonadotropic Substances. Miriam E. Simpson, C. H. Li and H. M. Evans.—p. 96.
Water Intoxication in Relation to Thyroid and Adrenal Function. R. Gaunt, Margaret Cordsen and Mildred Liling.—p. 105.
Role of Hypophysis and Adrenals in Control of Systolic Blood Pressure in Rat. J. H. Leathem and V. A. Drill.—p. 112.
Metabolism of Steroid Hormones. Adrenal Cortical-like Material in Human Urine. R. I. Dorfman, B. N. Horwitt and R. A. Shipley.—p. 121.

Gastroenterology, Baltimore

3:1-72 (July) 1944

*Heartburn. W. C. Alvarez.—p. 1.
Gastric Diverticulum: Gastroscopic Observation of 2 Cases. F. Whitehouse and J. M. MacMillan.—p. 13.
Cholecystography with Beta (4-Hydroxy-3,5-Diiodophenyl) Alpha Phenyl Propionic Acid. H. C. Ochsner.—p. 23.
Strangulation of Small Intestine Due to Prolapse Through Aperture in Great Omentum. S. Sanes and A. V. Postoloff.—p. 30.
Pyogenous Hepatitis with Staphylococcic Bacteremia Treated with Penicillin. A. A. Gonzalez and C. L. Vejar.—p. 33.
Gastric Excretion of Sulfadiazine in Man: Observations on Normals, Patients with Peptic Ulcer, Atrophic Gastritis and Gastric Cancer. N. Shapiro, H. S. Bloch and L. Schiff, with technical assistance of Lucy J. Crosley.—p. 39.
Effect of Detergents on Proteolytic Activity of Trypsin. C. L. Block, S. A. Portis and H. Necheles.—p. 45.

Heartburn.—Alvarez summarizes the results of questioning 123 persons with heartburn. The sensation consists of a burning and sometimes painful or rending distress, which begins usually under the lower end of the sternum and sometimes runs up as far as the pharynx. It tends to come in spells, and there are many curious and inexplicable features about its comings and goings. It does not appear to be due to any known organic disease of the digestive tract. At least 17 of the patients had or had had ulcer, but, curiously, when the ulcer was active and they had hunger pain they were free from heartburn. The symptom, therefore, did not seem to be produced by the ulcer. Heredity is sometimes a factor. Seventy-three per cent of the patients were men. Many of the patients suffered with regurgitation and belching, and these symptoms were occasionally associated with the heartburn, apparently only when the esophageal mucosa had been sensitized. When the esophagus was normal, regurgitation of acid gastric contents did not cause burning. Immediate causes of heartburn are eating too fast or too much or eating certain foods such as fats, coffee, onions, seasonings, radishes, tomato, orange, egg, cucumber, chocolate, peppers and cabbage. Alcohol and tobacco can be important factors, as can be emotion. Lying down or bending or exercising may bring on heartburn. The degree of acidity of the gastric contents is apparently not important, and heartburn can trouble persons with achlorhydria even to histamine. Three of the patients studied had cancer of the stomach. Sodium bicarbonate commonly gives relief, partly through neutralizing acid in the esophagus and the stomach and partly by causing waves of reverse peristalsis to run out and stop coming. The evidence obtained in this study fits with that obtained by experimenters and suggests that heartburn is due largely to regurgitation into a sensitized esophagus and partly to reverse waves of peristalsis coming up from the stomach.

Indiana State Medical Assn. Journal, Indianapolis

37:387-426 (Aug.) 1944

Retrocecal Appendix. W. C. Reed and U. F. D. Stork.—p. 387.
Psychosomatic Medicine. J. V. Reed.—p. 391.
Industrial Medicine in Action. E. S. Jones.—p. 397.
New Technic in Drawing Blood for Serodiagnostic Tests (Use of Hemospast). K. E. Markuson.—p. 400.
Primary Closure of Pilonidal Cysts and Sinuses. M. Cornacchione.—p. 402.
Eye Trauma in Amphibious Troop Operations of U. S. S. Solace. A. F. Clements.—p. 404.

Journal of Allergy, St. Louis

15:245-310 (July) 1944

Immunity Against H-Substance. M. B. Cohen and H. J. Friedman.—p. 245.
*Deaths from Asthma. F. M. Rackemann.—p. 249.
*Value of Patch Test in Poison Ivy Dermatitis, with Consideration of Group Reactions Between Rhus Extract and Turpentine, Pyrethrum, Ragweed Oil and 3-Geranyl Catechol. H. Keil.—p. 259.
*Penicillin Allergy: Probability of Allergic Reactions in Fungus Sensitive Individuals; Preliminary Experience. S. M. Feinberg.—p. 271.
Immunologic Management of Patient with Allergy. M. B. Cohen.—p. 274.
Significance of Allergy in Military Medicine: Report of Incidence of Allergic Diseases in Large Station Hospital, and Method of Preinduction Evaluation of Allergic State. E. M. Gold and J. M. Bazemore.—p. 279.

Deaths from Asthma.—Rackemann reviews the records of 82 patients who died because of asthma. Most of these deaths occurred in persons whose asthma began after the age of 45, although typical symptoms and pathologic manifestations can also occur in younger persons. Death from asthma is caused by the development of plugs of tough, sticky mucus which obstruct the bronchi and lead to suffocation. The pathologic picture is typical: it is characterized by voluminous, distended lungs of bluish gray, the cut section of which shows all the bronchi, especially those of medium and small size, occluded by plugs. The author presents one chart which shows in graphic form the mode of death and the pathologic changes in 50 of the author's patients who died with asthma as the presenting symptom. Of these, 27 presented pathologic features which he regards as typical of asthma. Another chart shows 55 cases found in the literature which meet the requirements, namely (*a*) a clinical history and a mode of death characteristic of asthma, (*b*) a necropsy showing voluminous lungs and bronchial plugs and (*c*) a necropsy showing no gross evidence of other causes of death.

Patch Tests in Poison Ivy Dermatitis.—Keil studied 72 cases, of which 40 were probable instances of dermatitis due to poison ivy, 26 of dermatitis venenata of various other causes, mainly plants, and 6 of doubtful instances of poison ivy. With the exception of the second subgroup, all of the patients showed positive reactions to an extract of poison ivy. The cases were carefully selected, so that the incidence of 64 per cent positive reactions to rhus extract was probably higher than the figures for normal subjects. These studies support the generally accepted opinions on the uses and limitations of the patch test in relation to poison ivy dermatitis: a positive patch test with a potent rhus extract does not prove the presence of dermatitis due to poison ivy but simply indicates sensitization to the plant. The diagnostic value of the test is depreciated by the high incidence of positive reactions in the normal adult population. A negative patch test eliminates past and present hypersensitiveness to Rhus toxicodendron; on this point rests the chief value of the test in differential diagnosis of dermatitis due to poison ivy. The quantitative patch test is an important method of checking the value of treatment in this disease. A positive patch test does not necessarily mean that the patient has had clinical dermatitis from poison ivy or will acquire it under ordinary conditions of exposure. The relation between the results obtained with the patch test and the acquisition of clinical disease depends probably on quantitative factors involving the

degree of hypersensitiveness and the severity of exposure. Those showing positive patch tests are more apt to acquire a dermatitis from contact with rhus than those with negative patch tests. The value of the test in experimental studies cannot be overstressed. There is no apparent biologic relation between hypersensitiveness to poison ivy and that to fresh turpentines of various types or to alpha and beta pinene. Group reactions may be encountered with old specimens of turpentine, probably because of an increase in the phenolic fraction of turpentine. Evidence of a group relation between the active ingredient in poison ivy and pyrethrum or ragweed oil was not found. Evidence is presented to show, in substantiation of the work of Landsteiner and Jacobs in guinea pigs, that, in man, 3-geranyl catechol is biologically related to the active principle in poison ivy. Hypersensitiveness to 3-geranyl catechol seems to be dependent on the unsaturated geranyl group in combination with the catechol configuration.

Penicillin Allergy.—Feinberg points out that reactions to penicillin, mainly in the form of urticaria, have appeared in 5.7 per cent of patients receiving the substance. The reactions did not resemble the classic and severe allergic reactions which would be likely to follow the injection of an allergen to which the person had been naturally sensitive. Ten patients who were clinically mold sensitive and who gave positive reactions with extracts of various Penicillia were given skin tests with two batches of penicillin. Reactions were negative in all cases. Apparently Penicillium sensitive persons are safe from allergic reactions to penicillin. The possibility of allergic reactions cannot be totally ignored in view of the fact that the original source of penicillin is a potent antigen and that at times some of the antigen may be a final contaminant. It is sugested that as an added safeguard every batch of commercial penicillin be tested on known Penicillium sensitive persons. The author tested a more recently prepared penicillin of higher potency. This preparation could be tolerated by an average Penicillium sensitive patient in doses of at least 500,000 units.

Journal of Bone and Joint Surgery, Boston

26:435-620 (July) 1944. **Partial Index**

Basic Problems in Bone Grafting for Ununited Compound Fractures. C. R. Murray.—p. 437.
Wound Healing in Compound Fractures and Repair of Bone Defects. K. F. Mech.—p. 442.
Surface Repair of Compound Injuries. J. B. Brown.—p. 448.
Bridging of Bone Defects in Compound Wounds. J. R. Moore.—p. 455.
End Results of Treatment of Fresh Fractures by Use of Stader Apparatus. C. M. Shaar, F. P. Kreuz Jr. and D. T. Jones.—p. 471.
Use of Haynes Skeletal Fixation Apparatus in Definitive Orthopedic Surgery. R. W. Johnson Jr. and J. Lyford III.—p. 475.
Use of Untubed Pedicle Grafts in Repair of Deep Defects of Foot and Ankle: Technic and Results. R. K. Ghormley and P. R. Lipscomb.—p. 483.
*Immediate Application of Free Full Thickness Skin Graft for Traumatic Amputation of Finger. H. R. McCarroll.—p. 489.
Injuries to Ligaments of Knee Joint. L. C. Abbott, J. B. de C. M. Saunders, F. C. Bost and C. E. Anderson.—p. 503.
Role of Penicillin in Management of Infection. J. M. Ferrer Jr. —p. 522.
Surgical Treatment of Hallux Valgus in Troops in Training at Fort Jackson During Year of 1942. M. Cleveland, L. J. Willien and P. C. Doran.—p. 531.
Principles of Amputations of Fingers and Hand. D. B. Slocum and D. R. Pratt.—p. 535.
Fatigue Fractures. P. A. Robin and S. B. Thompson.—p. 557.
*Bone Drilling in Delayed Union of Fractures. M. E. Pusitz and E. V. Davis.—p. 560.
Fractures of Os Calcis: Tripod-Pin-Traction Apparatus. E. D. McBride. —p. 578.
Posterior Approach to Shoulder Joint. C. R. Rowe and L. B. K. Yee. —p. 580.
Subtalar Dislocation. L. W. Plewes and K. G. McKelvey.—p. 585.
Acute Acromioclavicular Dislocation: Simple Effective Method of Conservative Treatment. I. Wolin.—p. 589.

Immediate Free Full Thickness Skin Graft for Traumatic Amputation of Finger.—McCarroll shows that the use of punch presses, trim machines, loading machines and numerous other automatic mechanical units by personnel often new and inexperienced in their operation is the factor responsible for the increasing role which traumatic amputation of fingers now plays in the field of traumatic surgery. Most of these injuries occur in the distal phalanx and result in a guillotine type of amputation, including all the soft tissue pad at the finger tip, a part or all of the nail and part of the bone. The amputation in all cases in this series of 45 cases occurred through the distal phalanx. These patients were treated by immediate application of a free full thickness graft. Of these 45 cases, 43 have shown complete takes of the grafts. Each presented a smooth, well rounded finger tip, soft, nonadherent, nonsensitive and satisfactory in appearance; all the patients have been able to return to their former occupation. They have been able to work during the period of postoperative care, since only the involved finger was incorporated in a dressing. The remaining 2 cases are classified as failures with loss of the graft, although in neither instance was the graft a hundred per cent loss. Each retained enough of the graft to aid in filling in the defect and in decreasing the period of disability, although there was an increased amount of scarring over the finger tip, which was adherent to the underlying structures. Immediate application of free full thickness skin grafts should be considered as the procedure of first choice in the management of traumatic amputation of the finger.

Bone Drilling in Delayed Union of Fractures.—Pusitz and Davis say that bone drilling is not a method of choice in the treatment of definite nonunion; it is intended for the treatment of delayed union. Differentiation between delayed and nonunion involves time and roentgenographic studies. A delayed union may be still present at the end of ten months, whereas nonunion may be present at the end of ten weeks. There are three essential types of nonunion: (1) typical pseudarthrosis with sclerosis of the ends of the fragments, (2) fibrous union with osteoporosis of the fragments and (3) fibrous union with atrophy of disuse. In delayed union, although there may be no discernible callus, there is no sclerosis of the ends of the fragments. If there is absolutely no evidence of callus formation at the end of four to six months, delayed union may be considered to be present. A large number, probably the majority, of delayed unions will ultimately unite. This may take eight months or eighteen months, and a proportion of these delayed unions will resolve themselves into nonunions. Delayed union is the primary indication for bone drilling. It should be performed within a four to six months period. The dissection should be minimal. A series of thirty to fifty holes are drilled. After the bone has been properly drilled, simple closure is effected. The part is then properly immobilized, as after a fresh fracture. A well fitting, nonpadded plaster of paris cast is applied, to which a walking caliper is added after a week or ten days. The authors review 25 consecutive cases in which bone drilling was done. All cases except 1 showed bony union both clinically and roentgenographically. The average duration for the development of union after drilling was eight weeks. The shortest period was three weeks, and the longest was five months. The patients were up and around in a walking cast a week or ten days after operation. There were no postoperative infections.

Journal of Clinical Investigation, Boston

23:289-416 (May) 1944. **Partial Index**

Level of Vitamin A and Carotene in Plasma of Rheumatic Subjects. R. E. Shank, A. F. Coburn, Lucille V. Moore and C. L. Hoagland. —p. 289.
Subclinical Vitamin Deficiency: IV. Plasma Thiamine. Mildred H. Carleen, N. Weissman and J. W. Ferrebee.—p. 297.
Characteristics of Normal Electroencephalogram: I. Study of Occipital Cortical Potentials in 500 Normal Adults. Mary A. B. Brazier and J. E. Finesinger.—p. 303.
Effects of Pleural Effusion on Respiration and Circulation in Man. M. D. Altschule and N. Zamcheck.—p. 325.
Influence of Collapsibility of Veins on Venous Pressure, Including New Procedure for Measuring Tissue Pressure. H. W. Ryder, W. E. Molle and E. B. Ferris Jr.—p. 333.
Preservation of Normal Human Plasma in Liquid State: I. Statistical Study of 1,751 Administrations. E. L. Lozner and L. R. Newhouser. —p. 343.
Effect of Single Injection of Concentrated Human Serum Albumin on Circulating Proteins and Proteinuria in Nephrosis. J. A. Luetscher Jr.—p. 365.
Skin Temperatures of Extremities of Persons with Induced Deficiencies of Thiamine, Riboflavin and Other Components of B Complex. Grace M. Roth, R. D. Williams and C. Sheard.—p. 373.
Renal Circulation in Shock. H. D. Lauson, S. E. Bradley and A. Cournand, with technical assistance of Vera Vessey Andrews.—p. 381.
Fate and Effects of Transfused Serum or Plasma in Normal Dogs. W. Metcalf.—p. 403.

Journal of Immunology, Baltimore

49:1-70 (July) 1944

Studies on Plague Immunity in Experimental Animals: I. Protective and Antitoxic Antibodies in Serum of Actively Immunized Animals. E. Jawetz and K. F. Meyer.—p. 1.
Id.: II. Some Factors of Immunity Mechanism in Bubonic Plague. E. Jawetz and K. F. Meyer.—p. 15.
Immunochemical Studies on Human Serum: VI. Fixation of Components of Human Complement by Bacteria. T. F. Dozois, S. Seifter and E. E. Ecker.—p. 31.
Id.: V. Bactericidal Properties of Purified C'1 and C'2 of Human Complement. S. Seifter, T. F. Dozois and E. E. Ecker.—p. 45.
Diagrammatic Representation of Human Blood Group Reactions. A. S. Wiener and H. E. Karowe.—p. 51.
Complement Fixation Reaction with Antigen of Lymphogranuloma Venereum (Lygranum). J. E. Blair, with technical assistance of Frances A. Hallman.—p. 63.

Journal Neuropath. and Exper. Neurology, Baltimore

3:199-310 (July) 1944

*Neurohistologic Findings in Experimental Electric Shock Treatment. N. W. Winkelman and M. T. Moore.—p. 199.
*Pathologic Characteristics of Embolic or Metastatic Encephalitis. B. J. Alpers and H. S. Gaskill.—p. 210.
Alterations in Brain Structure After Asphyxiation at Birth: Experimental Study in Guinea Pig. W. F. Windle, R. F. Becker and A. Weil.—p. 224.
Allergic Brain Changes in Postscarlatinal Encephalitis. A. Ferraro. —p. 239.
Multiple Meningioma and Meningiomas Associated with Other Brain Tumors. S. Arieti.—p. 255.
Subacute Necrotic Myelopathy: Fatal Myelopathy of Unknown Origin. C. Davison and S. Brock.—p. 271.
Reactions of Monkeys of Various Ages to Partial and Complete Decortication. Margaret A. Kennard.—p. 289.

Neurohistologic Findings in Experimental Electric Shock Treatment.—Winkelman and Moore subjected cats to electrocerebral shock, utilizing the faradic current of Berkwitz or the Cerletti-Bini type of house current. The experiments were conducted in close imitation to human electroshock therapy, and to 2 animals excessive doses were given intentionally. The nutritional aspects of the animals were carefully controlled. Microscopic studies of the brains and cords revealed no morphologic changes in animals receiving convulsive doses analogous to those given to human beings. In the 2 animals given excessive electric shock doses, one small area of pericapillary hemorrhage was seen in 1 and congestion of the smaller vasculature was observed in the other. In no case were subarachnoid hemorrhages or diffuse or extensive intracerebral hemorrhages encountered. While their studies indicate that permanent morphologic changes do not result from electrocerebral shock per se, they feel that intracellular biochemical changes do take place by virtue of the passage of the current and the resultant convulsion. These undemonstrable changes explain the clinical improvement in some patients. They gained the impression that in a large series of human cases in which a prolonged series of shocks was accompanied by a rise in blood pressure this was not attributable to cardiovascular-renal change but rather to changes within the autonomic nerve cells of the subthalamic nuclei.

Pathologic Aspects of Embolic or Metastatic Encephalitis.—Alpers and Gaskill, in their studies of 17 cases of embolic encephalitis, found that the heart valves are most frequently the source of metastatic encephalitis, particularly in cases of subacute bacterial endocarditis. Acute endocarditis of other types, pulmonary disease and foci involving other organs may give rise to this form of encephalitis. Clinical manifestations indicating brain involvement, particularly in endocarditis, may usher in the disease; they may be terminal or may occur anywhere along its course. The brain may contain few or numerous areas of encephalitis. These may be found anywhere in the cerebral hemispheres, brain stem or basal ganglions. Microscopically, brains so afflicted show a proliferative endarteritis which tends to be quite generalized, areas of perivascular infiltration with leukocytes, minute leukocytic nodules which are essentially miliary abscesses and in some instances areas of petechial and perivascular hemorrhage. Subarachnoid, cerebral or ventricular hemorrhage may be found as well as meningitis. The foci of metastatic encephalitis are probably blood borne and are probably carried by means of the system of paravertebral veins described by Batson.

Journal of Urology, Baltimore

52:1-98 (July) 1944

Physiologic Concepts Conveyed by Word for Kidneys Among Various Peoples. D. I. Macht.—p. 1.
Report of Case of Perirenal Hemorrhage from Spontaneous Rupture of an Intrarenal Artery. W. P. Longmire Jr.—p. 12.
Perirenal Abscess with Extension into Right Pleural Cavity Following Rupture of Right Renal Pelvis: Operative Findings and Results. N. S. Moore and H. H. McCarthy.—p. 17.
Gumma of Bladder: Report of Case. J. K. Ormond and J. G. Hemming Jr.—p. 23.
Operation for Cure of Stress Incontinence in Female. F. Macky. —p. 27.
Management of Traumatic Rupture of Urethra and Bladder Complicating Fracture of Pelvis. E. J. McCague and J. H. Semans.—p. 36.
Reconstruction of Membranous Urethra: Case Reports. C. A. W. Uhle and H. R. Erb.—p. 42.
Management of Urethrorectal Fistula: Review of Literature and Report of Spontaneous Closure. B. C. Corbus Jr. and B. C. Corbus Sr. —p. 61.
Sarcoma of Penis. B. Levant.—p. 63.
True Hermaphroditism: Report of 2 Cases. R. B. McIver, D. R. Seabaugh and M. Mangels Jr.—p. 67.
Kermatomatous Cysts of Scrotum: Case Report. A. A. Roth.—p. 86.
Xanthine Calculus: Case Report. A. J. Butt and H. D. Holliman Jr. —p. 89.
Nonspecific Urethritis of Venereal Origin. P. Grenley.—p. 92.

Minnesota Medicine, St. Paul

27:513-592 (July) 1944

New Intensive Measures for Treatment of Early Syphilis. P. A. O'Leary.—p. 535.
Preoperative and Postoperative Care for Bad Risk Patient. C. Dennis. —p. 538.
Early Diagnosis of Tuberculosis. B. J. Terrell.—p. 543.
Postmortem Examinations. H. E. Robertson.—p. 548.
Isolation from Milk Supplies of Specific Types of Green Producing (Alpha) Streptococci and Their Thermal Death Point in Millk. E. C. Rosenow.—p. 550.

27:593-680 (Aug.) 1944

Certain Obligations of Physician. E. M. Jones.—p. 617.
Malignant Carcinoid Tumors of Small Intestine: Report of 2 Cases. J. E. Blumgren.—p. 620.
Providing for Nutritional Needs of Older Patients in General Hospitals. E. L. Tuohy.—p. 623.
Relationship of Descensus Uteri to Pelvic Size and Morphology and to Certain Obstetric and Economic Factors. A. L. Dippel.—p. 627.
Oriental Diseases. G. J. Guldseth.—p. 631.
War and Pestilence. C. B. Drake.—p. 634.
Failure of Surgical Wound Healing Due to Talc. A. H. Wells.—p. 640.

New Jersey Medical Society Journal, Trenton

41:263-298 (July) 1944

Postwar Planning. L. H. Bauer.—p. 270.
Postwar Medical Education. R. C. Buerki.—p. 277.
Newer Aspects of Chemotherapy. B. W. Carey.—p. 279.

41:299-328 (Aug.) 1944

Planning for Medical Service in Postwar Period. J. E. Paullin.—p. 302.
Announcement to Doctors and Pharmacists of New Jersey. R. P. Fischelis.—p. 305.
Can Voluntary Health Insurance Meet the Need? E. A. Van Steenwyk. —p. 306.
Some Aspects of Abortion Problem. H. P. Shipps.—p. 311.

Public Health Reports, Washington, D. C.

59:1009-1040 (Aug. 4) 1944

*Histopathologic Changes Following Administration of DDT to Several Species of Animals. A. A. Nelson, J. H. Draize, G. Woodard, O. G. Fitzhugh, R. B. Smith Jr. and H. O. Calvery.—p. 1009.
Diamond Points and Discard Rate of Steel Dental Burs. H. Klein. —p. 1021.

Histopathologic Changes Following DDT Administration.—Nelson and his collaborators made microscopic studies on 117 animals of 9 different species after the administration of 1, 1, 1 trichlor-, 2, 2 diparaphenyl-ethane, an insecticide which is generally designated as DDT. The substance was administered by inunction, by stomach tube or by admixture in the diet and in doses varying from those fatal in a few days to those causing no perceptible lesions after several months. The animals included rabbits, rats, guinea pigs, mice, chicks, dogs, cows, sheep and a horse. Although there were wide variations in sensitivity to the compound among the different animals of a given species, the lesions caused were quite consistent throughout the different species. On the higher dosage levels, with the animals surviving for one to several weeks, there resulted a moderate degree of central necrosis of the liver or, with the

longer periods of survival, a combination of central necrosis and reparative hypertrophy which can be labeled as a moderate subacute degeneration of the liver. The thyroid often showed moderate colloid depletion, less often epithelial desquamation and rarely epithelial hyperplasia. Slight to moderate focal necrosis of voluntary muscles occurred in about 20 per cent of animals on the higher dosage levels. Rabbits showed certain lesions not seen in the other species, a focal necrosis of the gallbladder and an increased incidence of the "spontaneous" types of encephalitis and nephritis. Dermatitis in inuncted animals was mild throughout, except that rabbits on the highest doses showed slight focal necrosis of the epidermis. For a given dosage level of DDT, chickens and guinea pigs showed fewer microscopic lesions than did the other species. A special effort was made to determine nerve cell changes in the brain and spinal cord of animals with tremors. With routine fixation and staining (formaldehyde and Orth's; hematoxylin-eosin) no changes could be seen that were not present in controls similarly and concurrently fixed and stained. Rare myocardial and adrenal lesions may be of significance. DDT caused insignificant or no effects on bone marrow, bone, testis, pancreas and spleen. Renal lesions were slight and infrequent. Because of the tremors of long duration produced by it, DDT would appear to be a promising experimental agent for the neurophysiologist.

Southern Medical Journal, Birmingham, Ala.

37:415-470 (Aug.) 1944

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Body Section Roentgenography. G. J. Baylin.—p. 418.
*Cerebral Glioma in Siblings. W. Riese, J. M. Meredith and I. S. Zfass. —p. 424.
*Myocardial Infarction in Congenital Dextrocardia. L. E. Geeslin and G. R. Tyler.—p. 428.
New Operation for Shortening Round Ligaments. N. A. Schneider. —p. 434.
Uterine Malformation: Case Report. J. M. Olds, W. A. Swanker and J. E. Josephson.—p. 436.
Diagnostic Aid in Perinephric Abscess: Sulfonamide Ineffectiveness. G. G. Gilbert and J. E. Dees.—p. 438.
Cramp in Rectum: Significance, Differentiation and Treatment, with Case Reports. M. C. Pruitt.—p. 442.
Esophageal Manifestations of Pellagra. G. E. Fisher.—p. 446.
Hemolytic Anemia. M. F. Beard.—p. 448.
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Diabetic Coma. F. G. Speidel.—p. 454.
William Shakespeare, Therapeutist. W. E. Vest.—p. 457.

Cerebral Glioma in Siblings.—Riese and his associates state that the only "glioma" in which a familial tendency has been established is the glioma of the retina. Only occasionally has the familial occurrence of a true glioma been mentioned in the literature. They describe the clinical picture and the histopathologic type of 2 cases of cerebral glioma which occurred in 2 members of the same family (brother and sister). In both the growth developed in adult life, at the age of 39 in the sister and of 50 in the brother. In both cases the duration of the clinical history was two months. In the brother the tumor was a striothalamic growth; in the sister an involvement of similar regions was probable, although the tumor also involved the cortex. The histogenic type of the tumor was identical in the two instances; it was a glioblastoma multiforme. The sister also had a carcinoma of the left lung and uterine leiomyomas. The authors think that the fact that this woman did not develop a brain tumor of the same type of neoplasm which was present in the lung, but instead a primary glioma, is indicative of an intrinsic tendency to develop glioma. The authors do not think that pure coincidence would be satisfactory in explaining the occurrence of the identical type of brain neoplasm in siblings and suggest further investigations of the frequency of brain tumor in siblings and of the combination of primary brain tumor with primary tumors of other distant organs in the same person.

Myocardial Infarction in Congenital Dextrocardia.—Geeslin and Tyler present the history of an officer, aged 43, who complained of substernal "twisting" pain radiating into both shoulders and arms for the preceding four days. The presence of dextrocardia with situs inversus was established by physical examination, roentgenographic visualization of the transposed heart, stomach, liver and gallbladder and the mirror image inversion of lead 1 in the electrocardiograms in 1936 and 1943. Coronary occlusion was suspected from the history. The changes in leads 1, 2 and 4 of the serial electrocardiograms were diagnostic of an anteroapical myocardial infarction. In congenital dextrocardia the conductive system of the heart is transposed as well as the chambers and, since the left arm is nearer the right auricle in contrast to the normally placed heart in which the right arm is closer to the right auricle, a total inversion of lead 1 and transposition of leads 2 and 3 is produced. The use of mirror image leads to study the "mirror image" heart is a logical procedure, and their use to study heart disease in the presence of dextrocardia has been reported previously. The use of the mirror image technic is particularly important for the precordial leads. To place the precordial electrode on the left chest when a dextrocardia is present must fail to elicit a fair proportion of the available cardiac current deflections and offer the confused possibility not only of deflection reversals but of change in contour shape.

Surgery, St. Louis

16:1-168 (July) 1944

Symposium on Endocrinology of Neoplastic Diseases: Introduction. G. H. Twombly and G. T. Pack.—p. 1.
Tumors in Experimental Animals Receiving Steroid Hormones. W. U. Gardner.—p. 8.
Experimental Investigations Concerning Role of Pituitary in Tumorigenesis. H. Selye.—p. 33.
Endocrine Effects of Pituitary Tumors: Clinical Review. W. J. German.—p. 47.
Ovarian Tumors with Sex Hormone Function. E. Novak.—p. 82.
Endocrine Factors in Origin of Tumors of Uterus. H. C. Taylor. —p. 91.
Relationship of Hormones to Diseases of Breast. I. T. Nathanson. —p. 108.
Effect of Sex Hormones on Skeletal Metastases from Breast Cancer. J. H. Farrow.—p. 141.
Benign Hypertrophy and Carcinoma of Prostate: Occurrence and Experimental Production in Animals. R. A. Moore.—p. 152.

Union Médicale du Canada, Montreal

73:873-1002 (Aug.) 1944

Considerations of Cancer of Colon. A. Jutras.—p. 877.
*Allergic Purpura Simulating "Surgical Abdomen": Henoch's Purpura. C. Bisson and P. David.—p. 881.
Embolism of Lower Extremities. R. Amyot and J. Vasquez.—p. 885.
Cyst of the Thyreoglossal Duct Simulating a Laryngocele. V. Latraverse.—p. 890.
Suffocating Influenzal Laryngitis in Infant of 5 Weeks. N. Vezina. —p. 894.
Masked Syphilis: Study of Several Cases. H. Smith.—p. 898.
Tumors of Interstitial Cells of Testes. J. L. Riopelle.—p. 903.
Mode of Action of Vitamins. A. Gagnon.—p. 906.

Purpura of Henoch Simulating "Surgical Abdomen."—Bisson and David report the history of a child, aged 11, who fifteen days previously had had profuse sanguinolent vomiting. Sippy treatment was given for a week, but when at the end of this period a boiled egg was given another attack of sanguinolent vomiting occurred. At this time it was noted that the patient had petechiae on his feet, arms and buttocks. There was excruciating pain in the epigastric region. The child was stuporous, its temperature was 99.4 F. and the pulse rate was 88. The stupor and vomiting persisted and the stools became increasingly bloody. On the sixth day the child became doubled up with abdominal pain, refused all food and vomited repeatedly; the purpuric spots reappeared in large numbers on the extremities and the abdomen. An abdominal surgical emergency was thought of such as a typhic perforation, a Meckel diverticulum, intestinal invagination, acute pancreatitis or rupture of the appendix. On the following day the child suddenly was much improved and was free from abdominal pain, but the cutaneous spots persisted. The purpura was unusual because platelets and the bleeding time were normal. Schönlein's or rheumatic purpura is characterized by the predominance of articular symptoms, while Henoch's purpura is characterized by abdominal symptoms. Henoch's purpura should be defined as an allergic purpura with abdominal symptoms. In 95 per cent of cases of Henoch's purpura useless surgical interventions such as appendectomy, gastrectomy or cholecystectomy have been done. The treatment of Henoch's purpura is still largely empirical. It includes epinephrine to counteract the abdominal pain; vitamin P to regulate the permeability of the vessels and search for alimentary allergy and desensitization. This patient was found to be sensitive to crab meat and lima beans.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

17:165-196 (June) 1944

Diagnosis and Treatment of Lung Abscess: Symposium. T. H. Sellors, L. G. Blair and L. E. Houghton.—p. 165.
Energy Absorption: Part II. Integral Dose When Whole Body Is Irradiated. W. V. Mayneord and J. R. Clarkson.—p. 177.
Case of Peptic Ulcer on Greater Curvature of Stomach. A. Preiss.—p. 182.
Cancer of Lip. S. J. Douglas.—p. 185.
Geometrical Method of Dose Finding for Radium Sources, with Special Reference to Treatment of Carcinoma of Cervix Uteri. B. Sandler and E. M. Ungar.—p. 190.

British Medical Journal, London

2:1-34 (July 1) 1944

*Penicillin in Battle Casualties. J. S. Jeffrey and S. Thomson.—p. 1.
Early Diagnosis of Peripheral Nerve Injuries in Battle Casualties. W. R. Russell and A. B. Harrington.—p. 4.
Acute Hemolytic Anemia: Report of Case Presenting Hitherto Unreported Features. J. P. Currie.—p. 8.
Typhus Fever in Great Britain. A. P. Agnew and W. B. Kyles.—p. 10.
Tetanus After Head Injury in Immunized Subject. W. Lewin.—p. 11.

2:35-66 (July 8) 1944

Clinical View of Shock. V. Z. Cope.—p. 35.
Thoughts on Four Years of War Surgery—1939 to 1943. P. H. Mitchiner.—p. 37.
Neuropsychiatry at Royal Air Force Center: Analysis of 2,000 Cases. S. I. Ballard and H. G. Miller.—p. 40.
Spontaneous Renal Apoplexy with Resuscitation After Cardiac Arrest. S. L. Governale and A. G. Rink.—p. 43.
Gonorrhea in North Africa and Central Mediterranean. D. J. Campbell.—p. 44

Penicillin in Battle Casualties.—Jeffrey and Thomson state that the War Office formed in September 1943 a "Penicillin Control Unit." Supplies of penicillin were flown to Italy regularly. The drug was distributed among eighty operating centers. The calcium penicillin was mixed with sulfathiazole in the strength of 5,000 units of penicillin per gram of sulfathiazole. This made a satisfactory powder, which, along with an efficient insufflator, was distributed among the forward operating centers. Most of the sodium salt was sent to base hospitals to give adequate courses of penicillin systemically. The forward units were given small stocks of sodium penicillin for use in gas gangrene and penetrating chest wounds. The transfusion officer and his orderlies were entrusted with the systemic administration; 15,000 units in 3 cc. doses was injected at three hour intervals. Occasionally the administration was by continuous intravenous drip. The intramuscular route proved more satisfactory. The technic of penicillin administration in secondary suture became standardized (1) for superficial wounds, if clean—a single insufflation of penicillin-sulfathiazole powder and suture; (2) for dirty superficial wounds—preliminary insufflations once daily for two days, then suture over a third insufflation; (3) for sinuses, and perforating wounds where the powder could not reach—suture with fine rubber tubes and instillations of 3 cc. (250 units per cubic centimeter) down each tube daily for four days. In all three types practically no excision was done except to freshen the skin edge and remove a loose tag. The powder was at a strength of 5,000 units per gram but latterly equally good results were obtained at base hospitals using 2,000 units per gram. In empyema systemic treatment with penicillin is not enough. In severe fractures the course of penicillin extended over five to ten days (500,000 to 1,000,000 units): 15,000 units was given three hourly by intramuscular injection. Infected amputation stumps healed fairly well when treated by means of tubes and instillations, but better results were obtained with a systemic course of penicillin. Encouraging results were obtained in gas gangrene; in addition to radical surgery and gas gangrene antiserum, penicillin was given systemically. It was not felt that there was a special indication for penicillin in penetrating abdominal wounds, for it seemed that the deaths were due to physiologic reasons rather than to sepsis. Penicillin-sulfathiazole powder was insufflated into surface wounds and into the depths of the brain. In brain abscesses tubes and instillations formed the method of choice. With the use of penicillin-sulfathiazole powder many face wounds have had primary suture. Satisfactory results were obtained in cases of corneal ulcers and abrasions and conjunctivitis by two hourly drops of sodium penicillin, 1,000 units per cubic centimeter of distilled water. Penicillin-sulfathiazole powder insufflated on to the burned area and covered with tulle gras proved an excellent dressing for burns.

Journal of Physiology Cambridge

103:1-136 (June 15) 1944

Effect of Age on Dark Adaptation. G. W. Robertson and J. Yudkin.—p. 1.
Action of Vitamin D on Incisor Teeth of Rats Consuming Diets with High or Low Ca : P. Ration. J. T. Irving.—p. 9.
Nature of Synaptic Transmission in Sympathetic Ganglion. J. C. Eccles.—p. 27.
Action of Adrenalin on Transmission in Superior Cervical Ganglion. Edith Bülbring.—p. 55.
Pressor Bases of Normal Urine. Mary F. Lockett.—p. 68.
Action of Acetylcholine, Atropine and Eserine on Central Nervous System of Decerebrate Cat. I. Calma and S. Wright.—p. 93.
Stimulus Intensity in Relation to Excitation and Preexcitatory and Postexcitatory Inhibition in Isolated Elements of Mammalian Retinae. R. Granit.—p. 103.
Role of Peripheral Stump in Control of Fiber Diameter in Regenerating Nerves. F. K. Sanders and J. Z. Young.—p. 119.

Lancet, London

2:33-64 (July 8) 1944

Visual Problems of Aerial Warfare. P. C. Livingston.—p. 33.
Abdominal Wounds: Clinical Review of 65 Cases. H. G. Estcourt, J. A. Ross, S. I. C. Clarke and R. W. Ross.—p. 38.
*Toxic Reaction to Thiourea: Report on 3 Cases. C. R. St. Johnston.—p. 42.
Delayed Suture of Soft Tissue Wounds. A. I. S. MacPherson.—p. 43.
*Penicillin and Smallpox: Report of 4 Cases. W. D. Jeans, J. S. Jeffrey and K. Gunders.—p. 44.

Toxic Reaction to Thiourea.—St. Johnston states that, of 7 patients with thyrotoxicosis treated with thiourea, 3 developed toxic reactions. Pyrexia of 101 to 104 F. occurring eight to ten days after administering thiourea, with palpable enlargement of the spleen, a fall in the white blood cell count with monocytosis and a maculopapular eruption, was present in all 3 cases and appeared to be due to the thiourea. The 3 cases were remarkably similar. All symptoms and signs disappeared when the drug was withdrawn, to reappear in the first case when it was readministered.

Penicillin and Smallpox.—According to Jeans and his co-workers 37 patients with smallpox were admitted to a hospital in Italy during the spring of 1943. Two men soon died, covered with pustules. Four other men were critically ill and death seemed likely. They were covered from head to foot with vesicles which were becoming pustular and in places confluent. Throat and buccal mucous membranes were pustular and ulcerated. All 4 patients had had a course of sulfathiazole orally early in illness. Cultures from the pustules thereafter showed Staphylococcus aureus in abundance. The patients were then given sodium penicillin, 15,000 units intramuscularly every three hours, for three to four days (average 400,000 units). In the 3 that recovered there was a pronounced improvement within twenty-four hours. The quick drying of the pustules and subsequent minimal pock marking was quite striking. One of the patients who survived had never been vaccinated. The fatal case was one of confluent smallpox. The patient had been successfully vaccinated in the army in 1943 but never previously.

2:65-96 (July 15) 1944

Vital Statistics of 1943. P. Stocks.—p. 65.
Visual Problems of Aerial Warfare. P. C. Livingston.—p. 67.
*Proflavine Powder in Wounds. R. W. Raven.—p. 73.
Phosphatase and the Repair of Fractures. G. Blum.—p. 75.
Impetigo Contagiosa Treated with Microcrystalline Sulfathiazole. J. W. Bigger and G. A. Hodgson.—p. 78.

Proflavine Powder in Wounds.—Raven describes the effects of proflavine (2:8-diaminoacridine sulfate) in the treatment of wounds. All patients had received a chemotherapeutic drug before they reached the author. In the local treatment of wounds care is taken to ensure cleanliness of the skin surrounding the wound. Hair is shaved, purulent discharge is mopped

away and the skin is cleaned. If oil is present, ether soap is used; for ordinary contaminants soap and water suffices. A solution of 1 in 1,000 proflavine is then applied. Dead tissue is excised, avoiding sacrifice of good skin, and easily accessible foreign bodies are removed. Free drainage of the wound must be established. Next the wound is gently mopped with swabs soaked in a solution of proflavine so that a moderately dry cavity is obtained. Proflavine powder is carefully inserted into all parts of the wound, especially where there is a comminuted fracture of bone. The amount of proflavine powder used varies with the size of the wound. In most cases it has not exceeded 0.5 Gm. One layer of wide mesh gauze lightly impregnated with petrolatum is laid over the wound. In fractures, alinement of the bone fragments is secured and the part is immobilized in plaster over an adequate amount of cotton wool, which absorbs the wound discharge. If a joint is involved, it is immobilized in plaster in the correct position. Plaster is usually changed after about ten days. Proflavine was used not only in wounds involving bones and joints but also in suppurative lesions of the soft tissues and in burns. To ascertain its prophylactic value it has been applied to fresh wounds. The danger of overdosage is emphasized. In suppurating battle wounds the use of proflavine leads to satisfactory healing within a reasonable time and with a notable lack of scar tissue. Various infected lesions have been treated with a powder consisting of proflavine, sulfanilamide and ascorbic acid, and this combination has proved satisfactory for suppurating wounds, cellulitis and large chronic ulcers of the leg.

Schweizerische medizinische Wochenschrift, Basel

73:1221-1244 (Oct. 2) 1943. **Partial Index**

Clinical Aspects of Mental Depressions. J. Wyrsch.—p. 1221.
Pulmonary Infiltrates in Infectious Icterus of Weil. S. Moeschlin. p. 1227.
*Actinomycosis of Lung Cured with Irgamid N-Dimethylacroyl Sulfanilamide: Case. C. Merkle.—p. 1230.
Endobronchial Perforation of Hilar Tuberculous Adenitis with Elimination of Lymph Node Sequestrums. P. Steiner and M. Geissberger. —p. 1232.

Actinomycosis of Lung Cured with a Sulfonamide.—Merkle reports the case of a farmer, aged 44, in whom actinomycosis started in carious teeth and involved the mandible with formation of fistulas and board hard infiltrations on the chin. A pleural empyema developed either as the result of the mandibular abscess invading the mediastinum, or the lung and pleura becoming involved by aspiration. In spite of the prolonged administration of large doses of potassium iodide and roentgen irradiation, the patient continued to have fever, leukocytosis, increased sedimentation reaction, suppurating fistulas of the mandible and fetid sputum containing Actinomyces mycelium. The patient was given 6 Gm. of n-dimethylacroyl sulfanilamide daily for a period of seventeen weeks. This resulted in a cure. The patient has now remained well for four months. The total amount of 568 Gm. of the sulfonamide was well tolerated. In view of the great resistance of actinomycosis, the author regards it as unlikely that the chemotherapy acts directly on Actinomyces. Since Actinomyces is a saprophytic fungus and since actinomycoses with mixed infections are especially resistant, the author thinks that the administered sulfonamide preparation destroyed the favorable growth medium of Actinomyces.

Analecta Medica, Mexico, D. F.

5:1-34 (April-June) 1944. **Partial Index**

Development, Improvement and Perspective of Neurosurgery. S. Obrador Alcalde.—p. 1.
Actual Clinical Conception of Uremia. S. García Tellez.—p. 17.
*Therapy of Pleural Empyema. J. L. Gómez Pimienta.—p. 25.

Therapy of Pleural Empyema.—Gómez Pimienta classifies pleural empyema into tuberculous, septic and mixed types. Simple tuberculous empyema develops in patients with efficient artificial pneumothorax. Pleural drainage is here interdicted. Treatment consists in aspiration of the pleural cavity and lavage with 10 or 20 cc. of Lugol's solution in 1,000 cc. of isotonic solution of sodium chloride. Extrapleural thoracoplasty is indicated when the preservation of pneumothorax is necessary because of the severity of the tuberculous lesion. Tuberculous empyema complicating active pulmonary tuberculosis develops in patients with inefficient artificial pneumothorax. The therapy consists in extrapleural thoracoplasty after emptying of the pleural cavity by aspiration and lavage. Mixed tuberculous and streptococcic or pneumococcic empyema is caused by pulmonary perforation or by exogenous contamination. Treatment consists in aspiration, administration of a sulfonamide, preliminary intercostal pleurotomy and extrapleural thoracoplasty. Septic empyema is treated with a sulfonamide, aspiration of pleural contents and subsequent pleural drainage. The latter is resorted to only after the tuberculous pulmonary lesion has become quiescent, as shown by the transformation of the pleural fluid to pus and after formation of mediastinal and pleural adhesions, which tend to immobilize the mediastinum and limit the size of the postoperative pneumothorax.

Prensa Médica Argentina, Buenos Aires

31:1041-1080 (June 7) 1944. **Partial Index**

Gastroscopy in Diagnosis of Gastric Cancer. J. Nasio.—p. 1041.
*Dextrose in Pleuritic Effusion: Prognostic Importance. O. A. Garré, L. Desimone and R. Mingrone.—p. 1053.
Costal Tuberculosis. H. A. Passalaqua, L. Farias and J. O. Gutiérrez. —p. 1058.

Dextrose in Pleuritic Effusion.—Garré and his collaborators state that the amount of dextrose in pleuritic effusion is of prognostic significance. They made quantitative determinations in pleuritic effusion of 27 patients. They found that the average amount of dextrose for each thousand cubic centimeters of fluid was 0.2702 Gm. in purulent pleurisy, less than 0.60 Gm. in serofibrinous pleurisy and more than 0.60 Gm. in nonpurulent pleurisy. In effusion with an amount of less than 0.60 Gm. of dextrose for each thousand cubic centimeters of the fluid, smears and cultures are positive for tubercle bacilli. In fluids containing an amount of more than 0.60 Gm. of dextrose for each thousand cubic centimeters of fluid, smears and cultures are negative for tubercle bacilli.

Archiv für klinische Chirurgie, Berlin

204:211-444 (March 26) 1943

Therapy of Infected Gunshot Injuries of Joints. H. Hellner.—p. 211.
Callus Formation and Fracture Repair in Fractures of Diaphysis of Forearm, with Particular Reference to Pseudarthrosis. S. Annersten. —p. 299.
*Significance of Sugar Tolerance Test in Diagnosis of Commotio Cerebri. W. Osterchrist.—p. 332.
Experiences After Resection of Large Portions of Large Intestine. F. L. Duschl.—p. 344.
Indications for Early Operation of Injuries of Blood Vessels and of Aneurysms. H. Killian.—p. 355.
Roentgenologic Demonstration of Aneurysms in Wartime. C. H. Schröder.—p. 411

Sugar Tolerance Test in Commotio Cerebri.—Osterchrist points out that in the large majority of cases diagnosis of commotio cerebri is dependent on the statements of the injured or of witnesses, because there is no reliable method of clinical examination. Osterchrist investigated the sugar tolerance of 25 patients hospitalized with the diagnosis of commotio cerebri. These were not selected and clinically proved cases. The results of his tests are recorded in two tables. Table 1 records all cases that showed definitely pathologic curves, table 2 those with normal sugar tolerance curves. The sugar tolerance test permits differentiation of traumatically induced loss of consciousness from that caused by fainting, hysteria, coma and the like. Every traumatically induced loss of consciousness is accompanied by a temporary disturbance in the blood sugar regulation. This disturbance is frequently revealed in a pathologic increase in the fasting blood sugar and invariably in an abnormal course of a blood sugar tolerance test. Dextrose tolerance tests are valuable for the corroboration of the diagnosis of commotio cerebri. Cases with normal blood sugar tolerance curves are not true cases of commotio cerebri but are those of a traumatic shock. The author explains the concurrence of abnormal blood sugar levels with commotio cerebri as the result of a local traumatic impairment of the middle part of the hypothalamus with its sensitive functional centers.

Book Notices

Infections of the Peritoneum. By Bernhard Steinberg, M.D., Director of Toledo Hospital Institute of Medical Research. With a foreword by Frederick A. Coller, M.S., M.D., Professor of Surgery, University of Michigan Medical School, Ann Arbor. Cloth. Price, $8. Pp. 455, with 45 illustrations. New York & London: Paul B. Hoeber, Inc., 1944.

Much has been written on peritonitis from many points of view by many authors. Dr. Steinberg's book is a comprehensive review of this voluminous material as well as the report of his intensive experimental and clinical work on the subject for eighteen years. There is more emphasis placed on the relation of basic sciences to the condition than in most publications dealing with peritonitis. Most of Dr. Steinberg's researches have dealt with etiology and pathogenesis, and his conceptions are deserving of widespread dissemination among the medical profession. Uniform understanding of the early stages of peritonitis and its development would result in earlier and better treatment and a corresponding reduction of mortality. The basic principles expounded so well by Steinberg are of great importance in the management of this condition. There has been a tendency toward slighting them and substituting indiscriminate chemotherapy. While chemotherapy is of great value, it cannot as yet, and may never, displace basic surgical principles. Steinberg brings this out well, and for this reason his contributions are not only important but timely. Though this book is perhaps too comprehensive to be read and digested by all "accelerated" medical students, it is worthy of being carefully read by all doctors who may come in contact with peritonitis.

Infectious Anemias Due to Bartonella and Related Red Cell Parasites. By David Weinman, Instructor in Comparative Pathology and Tropical Medicine, Schools of Medicine and Public Health, Harvard University, Boston. Transactions of the American Philosophical Society Held at Philadelphia for Promoting Useful Knowledge. New Series—Volume XXXIII, Part III. Paper. Price, $1.25. Pp. 243-350, with 2 illustrations. Philadelphia: American Philosophical Society, 1944.

This monograph is an intensive study of bartonella infections in man and animals with a digest of the literature (723 references). In man, Carrion's disease (Oroya fever and verruga peruana) as well as asymptomatic bartonellosis are encountered in Peru, Colombia and Ecuador. There is suggestive evidence that the area, which appears to correspond with the distribution of certain species of sandflies of the genus Phlebotomus, may be spreading. The bacteriology, symptomatology, blood changes, pathology and therapeutic measures are presented in detail and discussed. A chapter is devoted to the public health aspects of bartonellosis. As Dr. Tyzzer notes in the introduction, "the present monograph should serve as a reliable, modern and full source of information and reference; the South American literature, which is so difficult of access, being particularly well represented."

Technique in Trauma: Planned Timing in the Treatment of Wounds Including Burns. From the Montreal General Hospital and McGill University. By Fraser B. Gurd, M.D., C.M., and F. Douglas Ackman, M.D., C.M. In collaboration with John W. Gerrie, M.D., C.M., Edward S. Mills, M.D., C.M., Joseph E. Pritchard, M.D., and Frederick Smith, M.D. Preface by John S. Lockwood, M.D., University of Pennsylvania, Philadelphia. With commentary by Ralph R. Fitzgerald, M.D., C.M., McGill University, Montreal. [Reprinted from the Annals of Surgery with Additional Text.] Fabrikoid. Price, $2. Pp. 68, with 20 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1942-1944.

This little volume is an attractively bound reprinting of three papers by the Montreal group which have appeared in the *Annals of Surgery* plus a foreword by John S. Lockwood and a commentary by Ralph R. Fitzgerald. The first two sections deal with the treatment of burns, and since the first was originally published in November 1942 it contains considerable material which is out of date. For example, it is recommended that tannic acid and silver nitrate be applied to large surface areas on the trunk or thighs. This method has fallen into disrepute, a fact which was recognized by the authors in the second paper, which appeared in December 1943, in which the exclusive use of a sulfathiazole emulsion was advised. The first paper mentions the use of a "burn tent" for the application of external heat. There is much evidence at hand that more harm than good is done by thus combating the so-called shock of burns. The photograph of the tent in operation shows a patient apparently almost hermetically sealed in with a battery of heating lamps. It is doubtful that the conscious patient would tolerate such anoxic and uncomfortable conditions for long. On the other hand, appropriate stress is placed on the avoidance of unnecessary dressings and on the value of early dermatome skin grafting.

The third section considers the treatment of other types of injuries and infections. In a general way the authors favor the "let alone" methods of Orr and Trueta. There is generous use of the M. G. H. (sulfathiazole) emulsion for local implantation in wounds. There is no statistical proof of the necessity for the use of the sulfonamide. Anticipating this objection in his commentary, Fitzgerald states that controls are impossible in clinical surgery. This view is hardly tenable in the light of the published statistical studies of Meleney and the collaborating study units of the Committee on Medical Research in this country.

This monograph is a valuable record of the point of view of one group of surgeons interested in giving the best possible care to patients with various kinds of trauma. It is not, however, a handbook which the novice can use for a quick solution to all his problems in the treatment of the injured.

Fundamentals of Internal Medicine. By Wallace Mason Yater, A.B., M.D., M.S., Professor of Medicine and Director of the Department of Medicine, Georgetown University School of Medicine, Washington, D. C. Second edition. Fabrikoid. Price, $10. Pp. 1,204, with 275 illustrations. New York & London: D. Appleton-Century Company, Inc., 1944.

This edition continues the policy set forth in the first, which appeared in 1939; it supplies in the briefest possible space the minimum of information necessary to deal with diagnosis and principles of treatment in clinical medicine exclusive of surgery. Subjects of special value to the internist in the armed forces have been added. Others, including primary atypical pneumonia, blood typing, hypoproteinemia, steatorrhea, sarcoidosis and coccidioidomycosis, have been revised or rewritten. A preliminary evaluation of the use of penicillin also has been included. There are fourteen contributors, including Dr. Yater. This is a true textbook rather than a reference book: the elimination of much material found in many similar publications unfits it to serve most reference purposes. Preparation of a book of this kind is now a colossal task. The appearance of a new edition at this time constitutes prima facie evidence of its popularity.

An Atlas of Anatomy in One Volume. By J. C. Boileau Grant, M.C., M.B., F.R.C.S., Professor of Anatomy in the University of Toronto. By Regions: Upper Limb, Abdomen, Perineum, Pelvis, and Lower Limb, Vertebrae and Vertebral Column, Thorax, Head and Neck. Reprinted 1944. Cloth. Price, $10. Pp. 398, with 460 illustrations. Baltimore: William Wood & Company, [1944.].

Designed to meet the needs of teachers and students and also those of physicians and surgeons, Grant provides in one volume a regional atlas that follows the method of dissection taught in American schools. It also should prove useful in clinical work. The structures of the human body are shown region by region: upper limb, abdomen, perineum, pelvis, lower limb, vertebrae and vertebral column, thorax, and head and neck. The drawings are by Mrs. Dorothy I. Chubb, a pupil of the late Max Broedel. To assure accuracy of the plates, each illustration is based on photographs of each specimen. A majority of the plates are colored, many of them in three, four or more colors. There is a detailed index providing a quick reference to the plates depicting any structure.

Accident Facts: 1944 Edition. Prepared by the Statistical Division, National Safety Council, Chicago. Paper. Price, 50 cents. Pp. 96, with illustrations. Chicago: National Safety Council, Inc., 1944.

The 1944 edition of Accident Facts presents in graphic form, and by means of tables and text, the important information concerning accidents in the United States during the calendar year 1943. This well organized booklet is indexed and one can find readily the total number of accidents by cause, by age group, by occupation and by geographic location and almost any other information on accidents which it is important to know. The National Safety Council deserves the full support of the medical profession in its efforts to reduce this leading cause of death and disability.

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OCT 27 1944

Queries and Minor Notes

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TRANSMISSION OF POLIOMYELITIS

To the Editor:—**How is infantile paralysis transmitted? The town where I live (population 1,200) has had 2 cases within the last three weeks and the cry for effective prophylaxis is being sounded. According to articles available to me, there are two schools of thought. Dr. Stimson (The Journal July 10, 1943, p. 764) says that "it has not been proved that flies can carry enough [virus] to infect human beings." Maxcy and Howe, as quoted in the editorial Dec. 4, 1943, page 904, assume that "the disease would not attack children preponderantly, as is the case, were it transmitted primarily by the fly or any other insect." On the other hand, Rosenow, South and McCormack (*Kentucky M. J.* 35: 437 [Sept.] 1937) and Trask, Paul and Melnick (*J. Exper. Med.* 77: 531 [June] 1943) quoted in your editorial on Aug. 28, 1943, page 1250, accumulate data that a high percentage of flies, swarming around sewage—polluted water—is able to infect experimental animals. The reasoning of Maxcy and Howe seems to be fallacious, as (*a*) children are not exclusively attacked by poliomyelitis in our epidemic, (*b*) the relative immunity of adults may be easily explained by a possible previous abortive poliomyelitis infection and (*c*) the seasonal distribution of poliomyelitis seems to favor indirect, rather than direct, contact. In winter children are much more crowded, with more intimacy and more pharyngeal discharge; the first frost usually kills flies and the poliomyelitis epidemics; does it make little boys wash their hands more? The fact that both our cases appeared in families living near the sewer infected Housatonic River, swarming with flies, makes me think of a possibility of an insect vector.**

George Vash, M.D., Hinsdale, Mass.

ANSWER.—The method of transmission of the virus of poliomyelitis has not yet been clearly demonstrated. Up to a few years ago the nasopharynx was accepted almost universally as the common port of entry as well as the port of exit of the virus of poliomyelitis. This theory enjoyed wide acceptance until three or four years ago, when the gastrointestinal port idea was reemphasized. The virus has been found consistently in the alimentary tract and stools of both patients and contacts. While a large body of circumstantial evidence supports the theory of direct contact from patient to patient, there is also the fact that virus has been recovered repeatedly from flies trapped in epidemic areas. However, the importance of the fly as a vector has not yet been clearly demonstrated. It is not possible in the present state of knowledge to say whether the contamination of the fly with virus is a result of the disease or a causal factor in it. The seasonal incidence of poliomyelitis epidemics, combined with the finding of virus in the human alimentary tract, stools, sewage and flies, lends weight to the contention that poliomyelitis is primarily an intestinal disease such as typhoid and dysentery. Not enough conclusive evidence has as yet been accumulated to permit a clearcut answer as to the usual mode of transmission.

SEBORRHEA OLEOSA

To the Editor:—**A woman aged 27, married, without children, has an extremely oily scalp and oily face. She has no pimples and no blackheads. With the exception of a chronic sinus infection she is perfectly normal. She does have, however, attacks of hay fever. She has been checked thoroughly: blood, urine, heart, lungs, and all are within normal limits. The bowels are regular. I have tried many things but am unable to get rid of this oily condition. X-ray treatments were suggested to the patient, but she rebelled because of an unpleasant experience with x-ray burns. She will wash her hair, and within twelve hours the entire scalp will be greasy. Can you make any suggestions?**

M.D., California.

ANSWER.—The case described is one of benign seborrhea oleosa, formerly called hyperhidrosis capitis (Jackson, G. T., and McMurtry, C. W.: Diseases of the Hair, Philadelphia, Lea & Febiger, 1912, p. 306) on the now discounted theory that the oil was a product of the sweat glands instead of the sebaceous glands.

Clinical investigations of the effect of large doses of vitamin A, vitamin D, niacin, pyridoxine or liver extract have produced evidence that each of these is effective in relief of some cases of acne vulgaris. Sex hormones, both male and female, have also been credited by some experimenters with good effects, by others with unfavorable effects. Such conflicts are also found in the research with vitamin A. One is forced to conclude that the causes of acne vulgaris are multiple and complicated. Some cases of acne rosacea also have been shown to respond to supplementation of the diet with large doses of riboflavin or of pyridoxine or the combination of these two members of the B group. Other cases of acne rosacea do not respond to this treatment. The relationship between the various vitamins and their interaction with the hormones is complicated.

Sayer (Newer Concepts in the Etiology and Treatment of the Seborrheic Dermatoses, *Urol. & Cutan. Rev.* **46**:719 [Nov.] 1942) reports good results in the seborrheic dermatoses from injections of crude liver extract 2 to 2.5 cc. once a week and a diet rich in vitamin B.

Local treatment may be helpful in the amelioration of the distressing features of the disease. It is presumed that hot packs to the face after soap and hot water cleansing have been tried as well as lotio alba. The latter can be used also on the scalp, if necessary in double strength (sulfurated potash 2 Gm., zinc sulfate 3 Gm. and bentonite lotion to make 30 cc.) applied to the scalp with a dropper after shaking the bottle. The bentonite lotion is made of 2.5 per cent of bentonite in rose water, allowed to stand several hours and then decanted to get rid of coarser particles (Fantus, Bernard, and Dynewicz, H. A.: Cuticolor Preparations, *J. Am. Pharm. A.* **27**:882, 1938). Daily application of this to the scalp results in drying of the hair as well as the stimulation of sulfur acting on the sebaceous apparatus.

In view of the objection to roentgen therapy, ultraviolet light may be used in dosage sufficient to cause a mild erythema.

ANTICOAGULANT TO FACILITATE INTRAVENOUS THERAPY

To the Editor:—**Has an anticoagulant such as citrate or heparin been used to facilitate the slow administration intravenously of such solutions as pentothal or penicillin by avoiding clotting in the needle or adjacent vein, without using enough anticoagulant to affect the general coagulation time of the blood? Can you cite references to the literature?**

Dell Theodore Lundquist, M.D., Palo Alto, Calif.

ANSWER.—So far as can be determined, anticoagulants have not been used to facilitate the slow administration of fluids intravenously. The flow of the solution itself is usually enough to prevent coagulation at the tip of the needle. Penicillin solution, for example, may be administered by continuous intravenous drip by allowing as little as 2,000 cc. of fluid to flow into the vein over a period of twenty-four hours. This slow passage of fluid through the needle usually prevents clotting of blood. It would seem to be advisable to avoid the use of citrate or heparin, since comparatively large amounts would have to be used to prevent clotting, particularly in cases in which the infusion is kept up for more than twenty-four hours.

SUTURES FOR REPAIR OF TENDONS

To the Editor:—**What size and type of suture are recommended for repair of tendons? What is the usual length of time of splinting and the optimal time at which to start passive and active movement of the involved tendons? I realize that each case is different but would appreciate general information.**

R. M. Nesemann, M.D., Kewaunee, Wis.

ANSWER.—No. 6 or No. 8 silk (Champion scale) is an excellent suture material. The exact size used depends on the thickness and strength of the tendon. It is impossible to say in a few words how long the part should be immobilized and when motion should be begun after tendon repair. The paper entitled "The Rate of Healing of Tendon" by Mason and Allen in the *Annals of Surgery* **113**:424 (March) 1941 is one of the best discussions of the subject and offers the surgeon definite help in deciding on the best plan of treatment in an individual case.

PANCREATIC EXTRACTS FOR DERMATOLOGIC DISORDERS

To the Editor:—**What available evidence is there that pancreatic tissue extract topically applied has any therapeutic effect on chronic eczema?**

Walter Wilson, M.D., Bridgeport, Calif.

ANSWER.—Several authors have reported on the use of pancreatic tissue extract in cutaneous disorders. In all of these reports the material was given by injection. No report has been found in which the topical application of pancreatic extract was made.

References:

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